The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLVI No. 6281 — LONDON, JANUARY 6, 1956 — PRICE 9d.

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557 feet of tunnel (8′ 6″ bed width) was recently driven through rock in seven days — a world record! The tough job of haulage was, of course, handled by Ruston diesel locos

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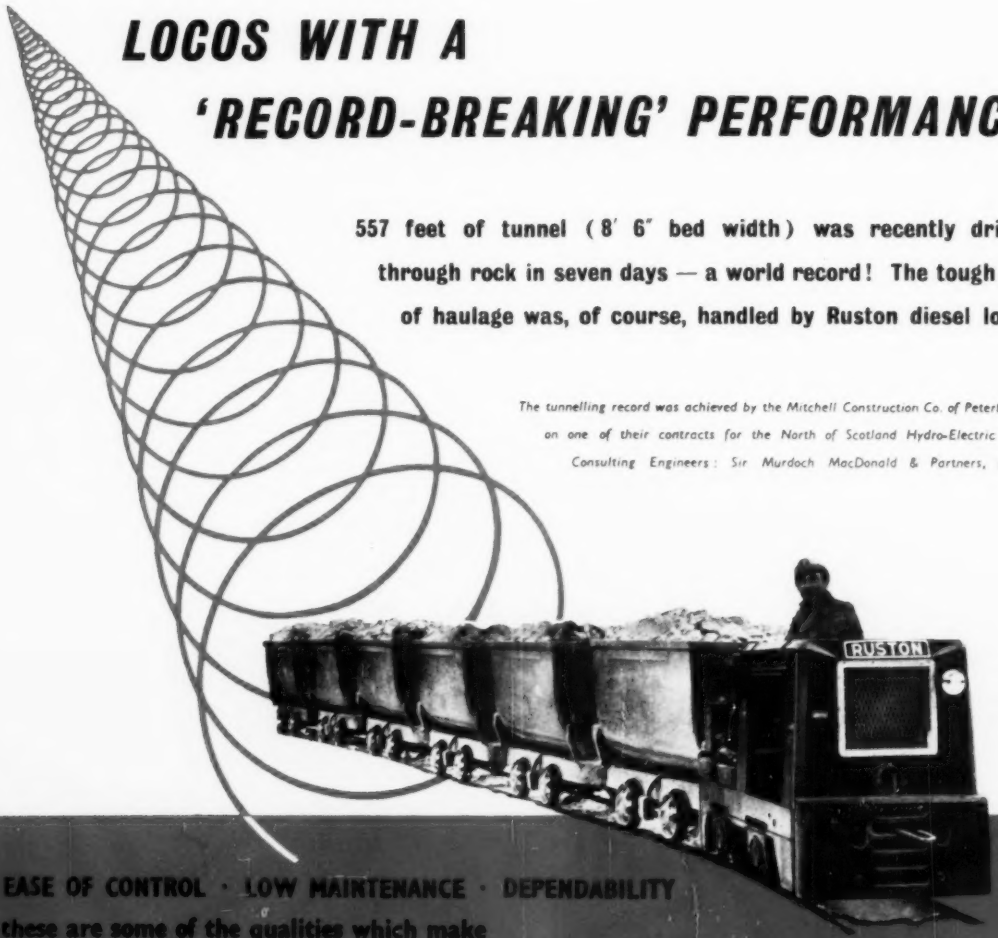

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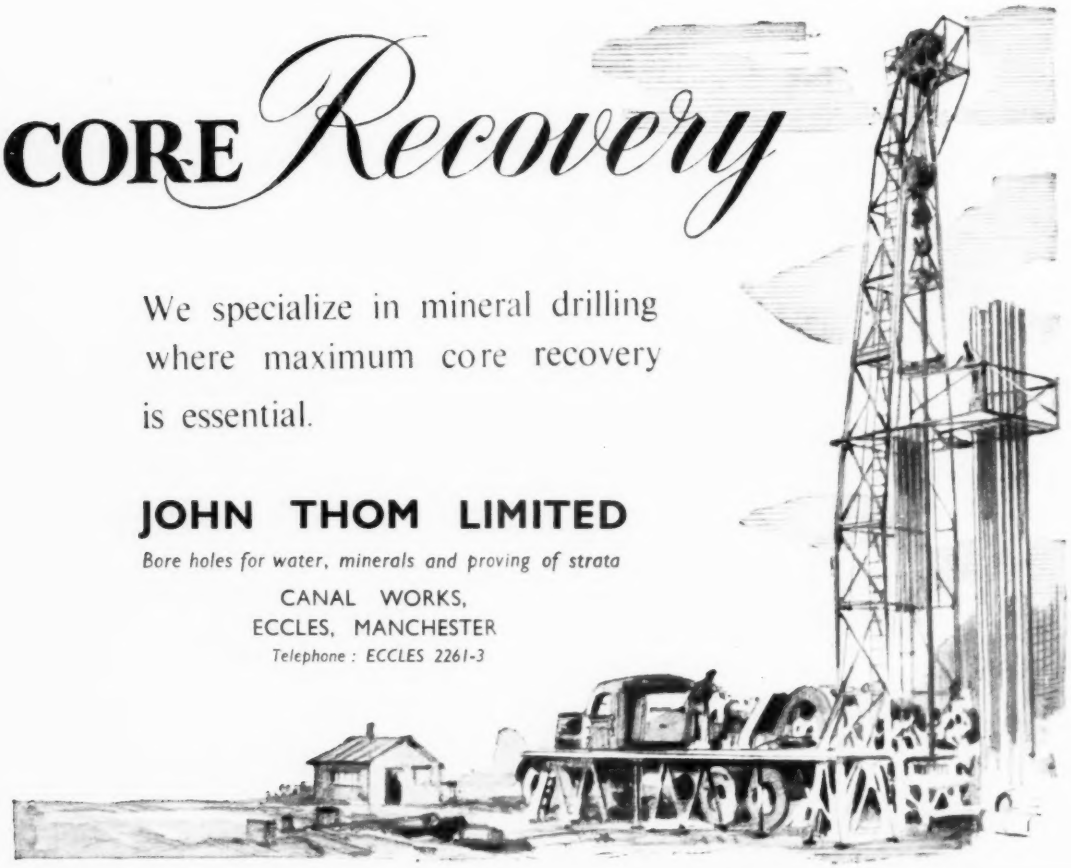

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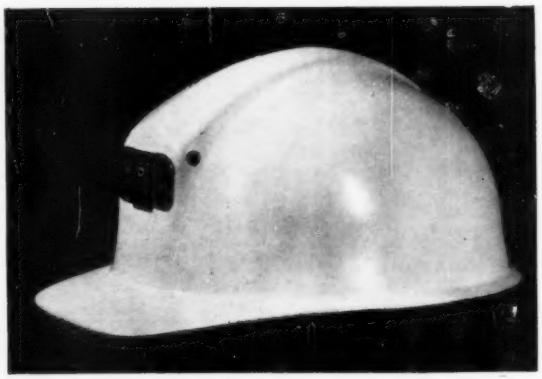

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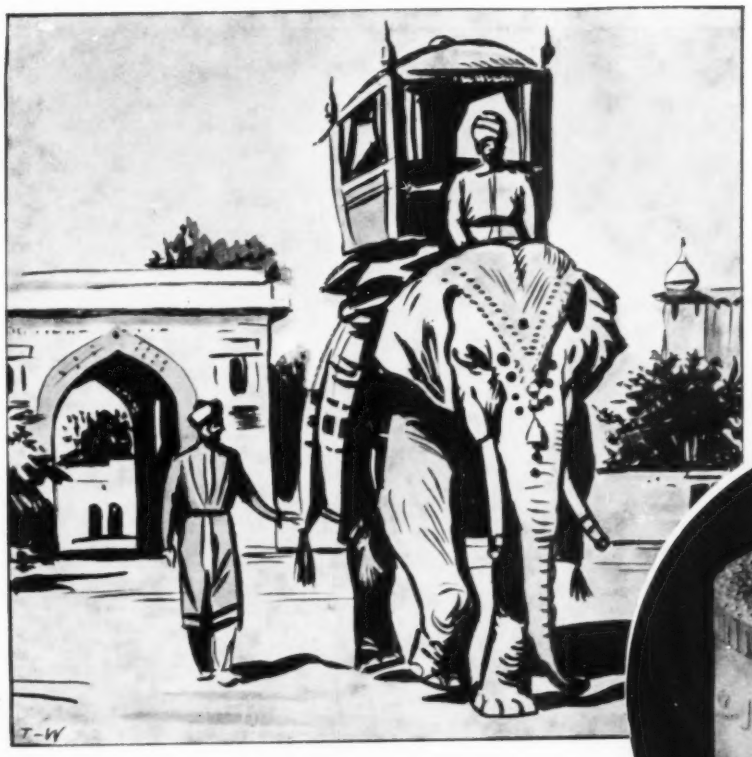

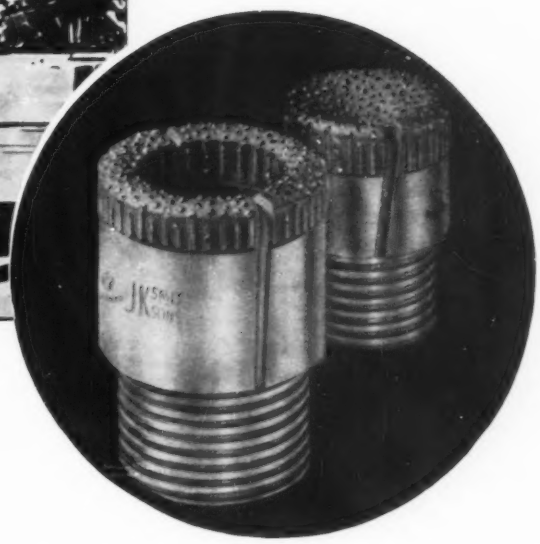

Diamonds and Indian princes

Until the Central Government took office, the royalties from the mines in the oldest working Indian diamond field were paid to the Maharajah of Panna, who was also entitled to retain the larger diamonds. From among these the Maharajah's predecessors assembled a necklace of 52 perfect uncut octahedral stones, varying in size up to 25 carats and aggregating 325 carats, beautifully set in gold. Many of the old princes of India accumulated stores of diamonds, and vast wealth in diamonds probably still lies in the treasuries of the princes of India.

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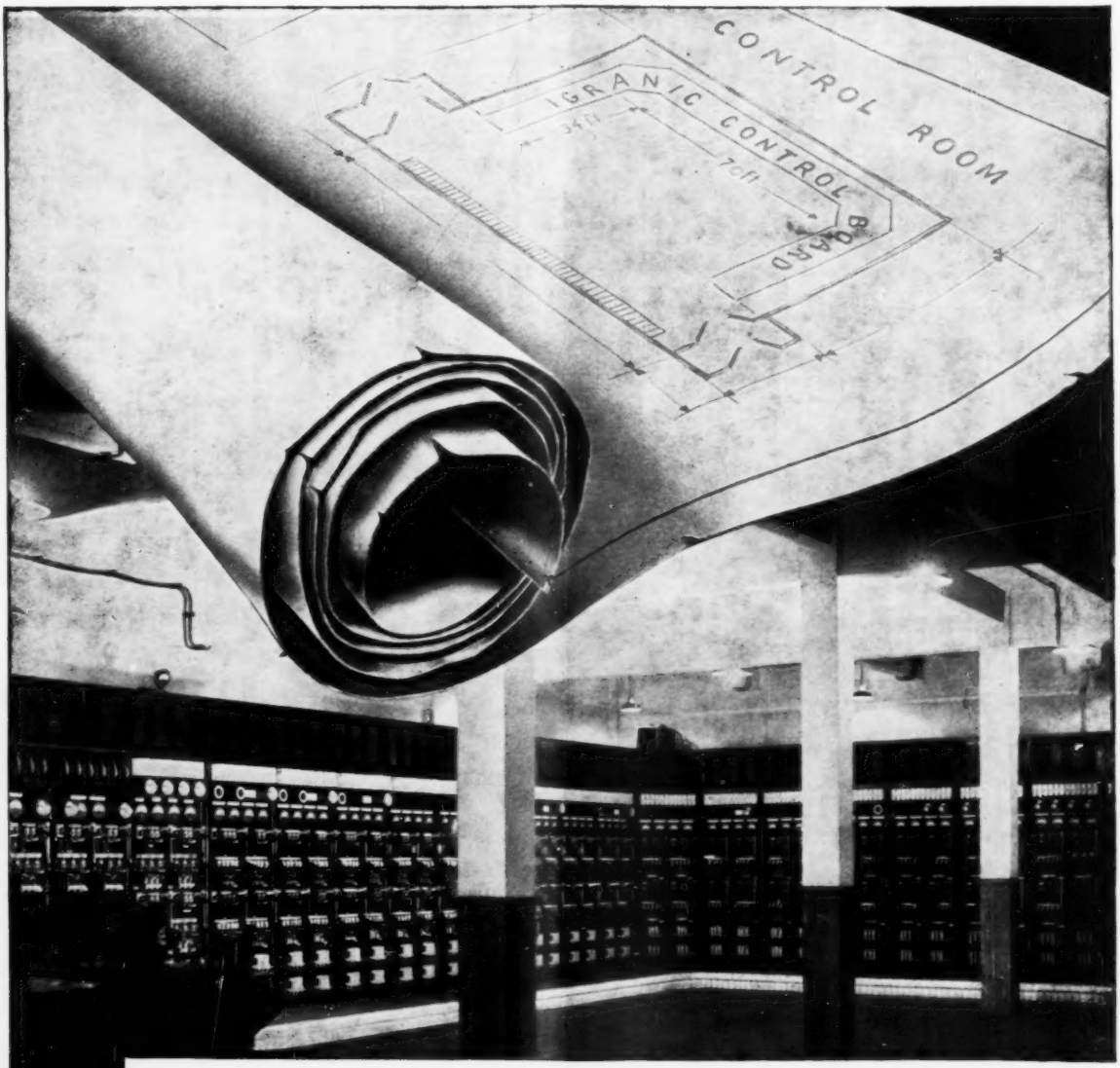

Right from the very beginning...

* The open-type motor control equipment shown here is part of a specially housed installation for controlling a large coal preparation plant in Yorkshire.

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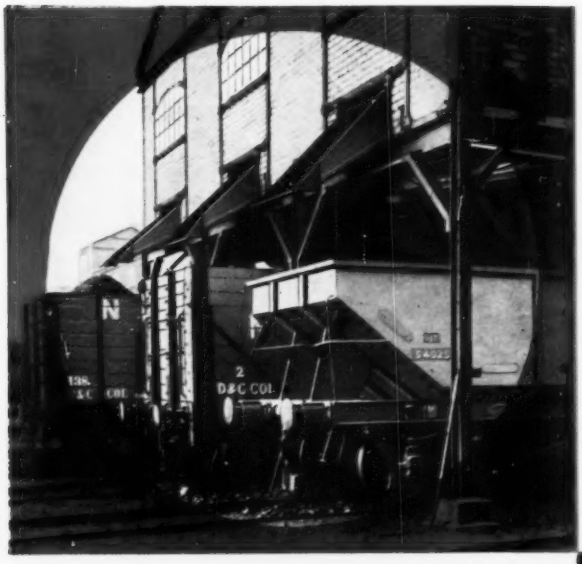
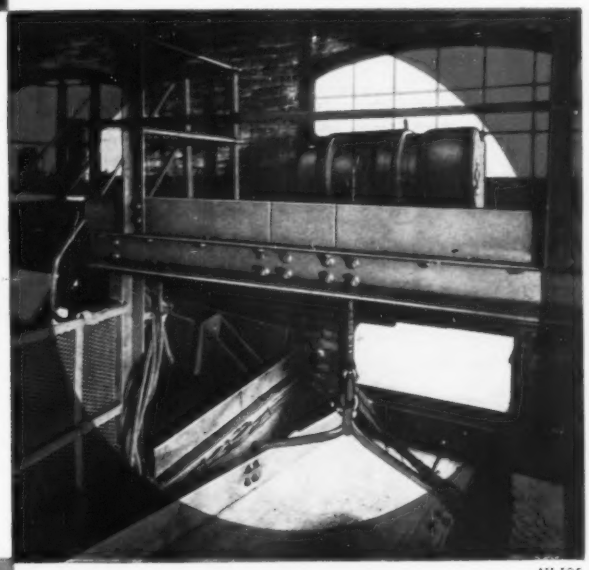


APPLICATION: raising and lowering conveyor booms.

These three PIKROSE HOISTS operate by remote control the conveyor booms at a large N.C.B. colliery. They raise and lower them to regulate the feed of coal to the wagons beneath. Notice the compact mechanism and the little space they occupy.

PIKROSE BOOM HOIST
with PERIGRIP Remote Control



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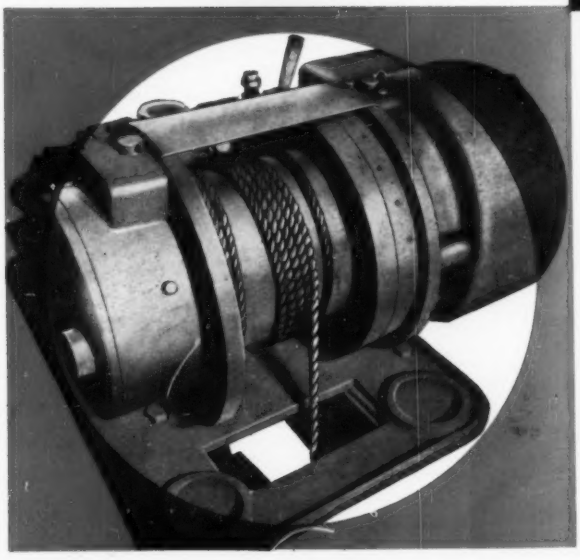

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HOW ATLAS COPCO EQUIPMENT HELPED FRANCE PRODUCE 55 MILLION TONS OF COAL IN 1954

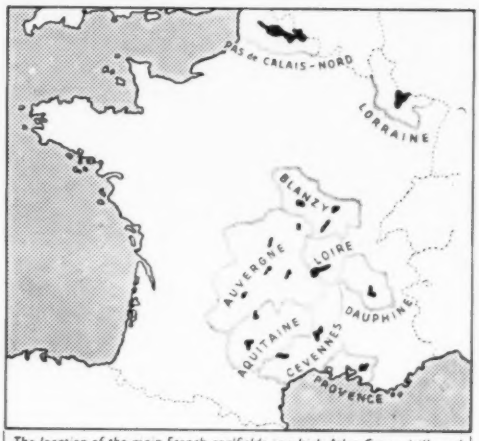
France today is one of the leading coal-producing countries in the world. The progressive modernisation policy of French mining authorities has created an industry that is one of the strongest links in the country's economy. With the introduction of new mining methods, production figures have risen year by year reaching fifty-five million tons in 1954.

Over the last ten years France has started nineteen new mines and modernised many more. In these mines, productivity is the highest in Europe while output per man-shift saw an increase of 55.8% between 1948 and 1954.

GETTING AT THE COAL

The fifty-five million tons of coal produced in 1954 entailed immense development work. It meant the drilling of 125 miles of galleries and the excavation of sixty million cubic feet of rock. With the use of fast and efficient drilling equipment on these preliminary operations, 1954's high production figure was achieved.

To speed development work, French mining engineers brought in the lightweight combination of pusher leg drills and tungsten-carbide-tipped drill steels—a drilling method pioneered by Atlas Copco and Sandvik in the early 'forties. At the present time four thousand of these light rock drills are in operation throughout the French coalfields. Many of them are *Atlas Copco* drills fitted with *Sandvik Coromant* steels.



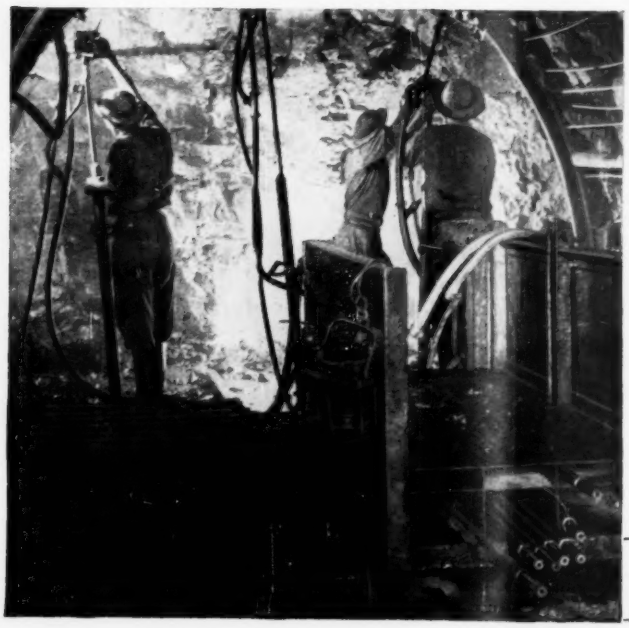
The location of the main French coalfields in which Atlas Copco drills and Sandvik Coromant drill steels are extensively used

The Atlas Copco light rock drills and Sandvik Coromant tungsten-carbide-tipped steels in use down the mines were supplied by Atlas Copco France S.A., the French company in the world-wide Atlas Copco Group.

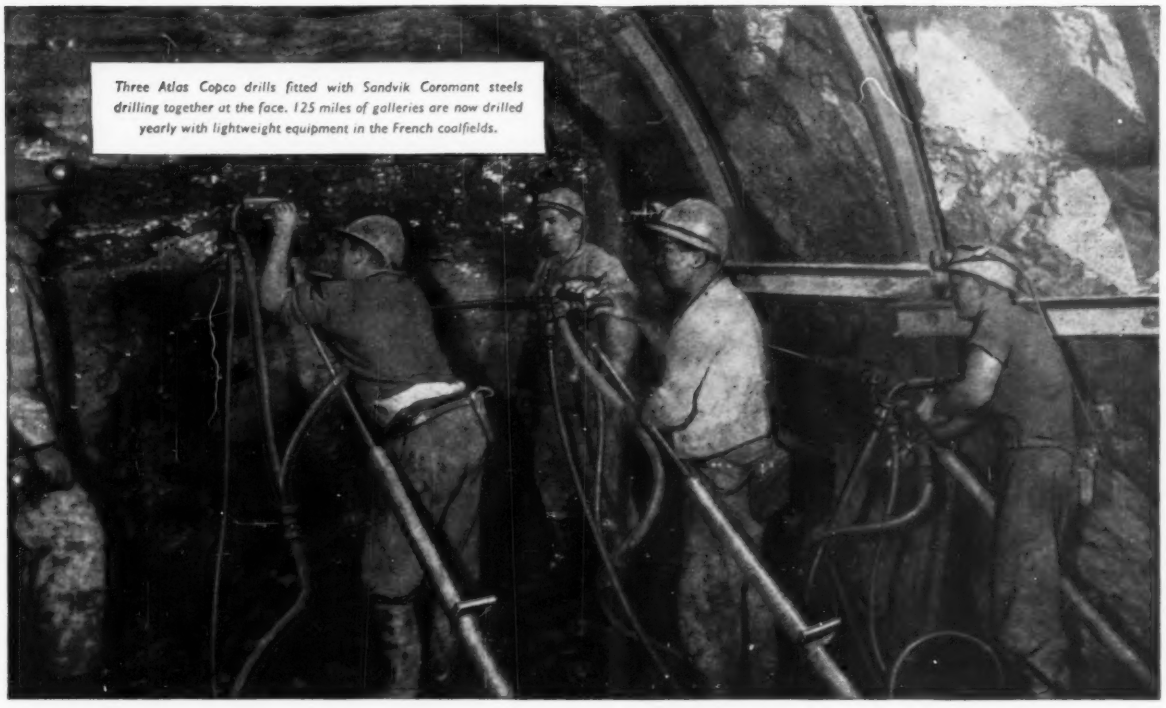
MORE DRILLS IN ACTION

Atlas Copco light rock drills and Sandvik Coromant steels were developed, from the earliest research and experimental stages, to work together. Today, this unbeatable combination is the world's most widely used drilling unit.

The Atlas Copco light rock drill is small and compact in design and can be operated by one man. This saves space. Enables you to have a greater number of drills in action at one and the same time. *More* drills mean *faster* rounds!



Atlas Copco rock drills on development work down a mine in the Nord-Pas de Calais area. By speeding up development work France was able to produce 55,000,000 tons of coal in 1954.



Three Atlas Copco drills fitted with Sandvik Coromant steels drilling together at the face. 125 miles of galleries are now drilled yearly with lightweight equipment in the French coalfields.

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Sandvik Coromant steels are extra-tough! You can be sure of a quality that never varies. This is because Sandvik control every phase of production—from the mining of iron ore, processing of wolfram ore, to the final tungsten-carbide inserts used throughout the world wherever Atlas Copco drills are in action. Together, Atlas Copco light rock drills and Sandvik Coromant steels have brought a new method of drilling. One of *new* speeds and *new* economies. France has adopted and benefited from it on all-important development work down its mines.

*Atlas Copco light, **one-man** rock drill in action at the Henin Liétard Mine. It is fitted with a Sandvik Coromant tungsten-carbide-tipped drill steel.*

The Atlas Copco Group puts compressed air to work for the world. It embraces thirty-one Atlas Copco companies and twenty-four agents, manufacturing or selling and servicing Atlas Copco equipment in more than 50 countries throughout the world.

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The Mining Journal
Established 1835

Vol. CCXLVI No. 6281 LONDON, JANUARY 6, 1956 PRICE 9d.

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Published by The Mining Journal Ltd., at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 5s. per annum

NOTES AND COMMENTS

Plastics in Battery Construction

The mining industry is interested in plastics not only as actual or potential competitors to metals, but also because of the possibilities which exist for improving the efficiency or economy of its own operations by the use of synthetic materials. The strength of the plastics industry lies in the ability, within limitations, to supply materials compounded to possess the optimum combination of properties for a given use. Mining engineers are already familiar with polyvinyl chloride (PVC) in such applications as conveyor belting and ventilation ducting. There are, of course, many other plastics which might find uses in mining, though it by no means follows that materials giving satisfactory service elsewhere could meet the particular requirements of the mining industry.

Interesting possibilities are suggested by the growing use of toughened polystyrene in the manufacture of batteries for aircraft. Polystyrene has outstanding electrical properties and is highly resistant to the corrosive action of both acid and alkaline electrolyte solutions. Its heat distortion temperature is sufficiently high to prevent loss of shape and dimensions under normal conditions of service. Among its other desirable characteristics are low specific gravity, ease of moulding, and low cost. Polystyrene of standard grades is susceptible to "crazing" or bruising, but this difficulty has been overcome by the development of toughened grades having greatly increased impact strength.

Because of its excellent acid resistance and its good dimensional stability, toughened polystyrene is being used in the U.S. not only for aircraft batteries but also for motor car and traction batteries, and it is reported to be replacing glass for battery jars in many stationary applications.

The mining industry has more to gain than almost any other industry, other than aircraft manufacture, from the development of light, unbreakable batteries, which could be transported with minimum effort to any point on the surface or underground. A large market clearly awaits the manufacturer who can supply batteries light enough to be transported with maximum ease yet with sufficient toughness and resistance to temperature to stand up to conditions underground. From technical data supplied by the plastics industry, it would appear that toughened polystyrene goes a long way towards meeting these requirements. A grade now manufactured in the United Kingdom has an Izod impact strength of 1.0-1.8 lb./in. notch and a Charpy impact strength of 8 x 10^5-12 x 10^5. Its elongation at break is 10-30 per cent. Another manufacturer claims to have developed a toughened polystyrene plastic combining such exceptional toughness with rigidity, that mouldings without reinforcement can withstand the weight of a car driven across them without breaking. Though it would be rash indeed to claim indestructibility for any equipment used in mines, it seems evident that toughened polystyrene can stand up to as much hard usage and ill treatment as most materials.

So far as temperature is concerned, toughened polystyrene has a softening point of 85 deg. C. and is dimensionally stable below 70-80 deg. C. It is resistant to water and has an extremely low water absorption rate. Humidity should therefore present no problem, while it is only at the higher temperatures encountered in deep level mining that difficulties would be presented by softening and dimensional changes. There seems no reason why the limitations imposed by temperature should preclude the use of polystyrene battery cases on the surface or even underground at levels where softening and distortion would present no risks.

Though containers moulded in plastics materials are widely used for mine lamp batteries, and have actually been tried on alkaline batteries, we believe that nylon is the only plastic which up to the present has been used for miners' cap lamp batteries of the alkaline type—an application developed successfully by a manufacturer in the United States.

One of the difficulties is the long life demanded from mine lamp batteries, particularly when Edison cells are employed. By using stainless steel it is possible to obtain a life roughly coincident with that of the cells themselves. It should also be borne in mind that one of the principal markets for mine lamp batteries of British make is the diamond and metal mines of South Africa, where ruggedness is of first importance. Although hard rubber encased batteries are used they require to be so heavily reinforced with steel that the original advantage is lost. With the exception of nylon, which is extremely expensive in Britain,

plastics do not at present appear to offer any worthwhile advantage over stainless steel, since the advantage resulting from the gain in weight would probably be offset by the considerable loss of life.

Experiments are now being carried out on the Continent with polystyrene, but the batteries concerned are designed for a much shorter life and in these circumstances the plastic is expected to prove reasonably satisfactory.

This, of course, is by no means the last word, for research and development in the plastics industry are as continuous as they are in mining. Having solved the problems associated with the production of lighter batteries for aircraft, there is no reason why plastics manufacturers should not be able to perform a similar service for mining, providing the rewards seemed sufficiently attractive to warrant the cost of research and development. Moreover, lamps are by no means the only type of mining equipment for which batteries are employed.

The development of plastic battery cases for mines, however hypothetical an example it may appear, is at any rate a good illustration of the possibilities which exist for fruitful collaboration between two industries whose interests are not necessarily conflicting.

Still Twilight in the New Zealand Mining Industry

The annual report of the New Zealand Minister of Mines has made dismal reading in recent years. The trend of production has been steadily downwards and, so far as gold and base metal mining are concerned, there appear to be no developments in view sufficiently encouraging to offer any prospects of revival.

Three years ago we referred to the "twilight" of New Zealand metal mining. The best that can be said of the Minister's Statement for 1954 is that darkness has not yet completely fallen. The patient, like the heroine of an opera, is certainly being a long time dying, but there is nothing to suggest that time is on her side. The fact that gold production at 41,713 oz. actually showed an increase of 3,057 oz. is of no significance, being accounted for by the recovery from cleaning-up operations at the Martha treatment plant. Of the total production, quartz mines contributed 13,832 oz., due solely to the aforesaid cleaning-up operations, which have now been completed; dredging yielded 26,674 oz., a decrease of 6,840 oz.; and alluvial mines 1,207 oz., a decrease of 374 oz.

Five dredges operated during 1954, three on the West Coast and two in Otago. Late in the year, however, the Grey River Dredge ceased operations when all available ground had been dredged. Of the remaining dredges, one on the West Coast has only a short life ahead of it, while one of the Otago dredges is small and its production is not significant. At this point the doleful statement ceases, for the time being, to follow the pattern of the well-known nursery rhyme, for the Kaniere dredge is now being re-erected on a new area in the Taramakau River. The net result, however, is that in a year or so large-scale dredging operations will be confined to two dredges on the West Coast and one in Otago. Prospecting of alluvial areas for dredging operations has now ceased and there seems little prospect of any extension. In the alluvial field two sluicing companies were still active, while there were also a number of small-scale producers whose output progressively declines.

In the course of a few years, concludes the Minister, the dredges must exhaust their areas and then for all practical purposes gold mining can be regarded as extinct.

Equally cheerless is the picture presented by almost all other ores and metals. The output of silver declined from 75,888 oz. in 1953 to 33,049 oz. in 1954, platinum from 2 oz. to 1 oz., manganese ore from 289 tons to 239 tons, and tungsten ore from 39 tons to 28 tons. Only in the case of iron ore, which rose from 2,762 tons to 2,916 tons, is any improvement recorded.

Here again, the results of prospecting and exploration give little ground for encouragement. Work on antimony ore prospects has been discontinued and the syndicates concerned have gone into liquidation. A diamond drilling programme to test a copper orebody at depth was completed at Kawau Island. Four holes were drilled, but all of them failed to disclose copper in payable quantities. No further work was carried out by the Auckland Smelting Co. Ltd. at its sulphide deposit at Te Aroha, but attempts were being made to interest overseas mining companies in this area. The publicity given to overseas discoveries led to a revival of interest in prospecting for uranium ores, but no occurrences came to light.

In the non-metallic field the gloom is relieved by one or two brighter patches such as the re-opening of an asbestos mine in the Upper Takaka Valley due to the improved market position, the production of 720 tons of impure magnesite compared with 517 tons in 1953, and the production of 146 tons of perlite from a deposit at Ongeroto, which was processed at Wellington. Tests have shown that the New Zealand product comes up to the standard required by the Perlite Institute of America. Attention has also been given to a low grade pyrite deposit in the Kauaeranga Valley near Thames, where a considerable tonnage of material having a seven-eight per cent sulphur content appears to exist. At the present time, however, the grade of material does not warrant the cost of further exploration, particularly in view of the availability of sulphur from other sources.

For the past twenty years or more coal production has fluctuated between 2,000,000 and 3,000,000 tons annually, of which from 25 to 30 per cent is from opencast mines. Both imports and exports are negligible and with measured, indicated and inferred reserves aggregating over a billion tons, production can doubtless be maintained indefinitely on the present scale. Since 1949 there have been increases in both measured and indicated coal, principally as the result of intensive boring at Maramarua, Huntly and Kaitangata.

On this less doleful note we leave New Zealand for the time being, wondering whether at the end of another twelve months the Dominion's base metal mining industry will still be lingering on. Unhappily the possibility of ultimate recovery can scarcely be said to exist.

N.S.W. Legislates Against Unsound Company Promotions

The New South Wales Government has made a rather belated move to protect the public from unscrupulous company promoters, and a Petroleum Act, directed to that part of the industry, will operate in the New Year. This seems to have been prompted by company promotion during the recent oil boom which was not followed by any attempt at prospecting.

The new protective legislation provides that a company cannot be floated until a prospecting licence or mining lease has been obtained; that before this the status and technical knowledge of the applicant will be investigated; the applicant must take out a petroleum exploratory licence covering 1,000 to 5,000 sq. miles at a fee of 2s. per sq. mile; a petroleum prospecting licence must be held for a maximum of 200 sq. miles and a minimum of eight sq. miles at a fee of £1 per sq. mile; if the search appears successful the applicant must take out a mining lease for 20 years; within 28 days of the granting of such lease the applicant must enter into a fidelity bond for not less than £1,000.

Centenary of an Engineering Contemporary

On January 4, 1956, one of Britain's oldest technical journals, *The Engineer*, achieved the distinction of completing a hundred years of continuous publication. On January 4, 1856, when its first number appeared, there were not many periodicals in Britain which made it their business to record engineering developments and achievements. Among the few survivors from those early days is *The Mining Journal*—established in 1835—which extends its congratulations to its contemporary on reaching its first century.

The influences on engineering advancement during the period 1856-1956 are reviewed in a special Centenary Number, which contains a short history of *The Engineer* itself. The spate of inventions induced by the Great Exhibition of 1851 undoubtedly influenced the decision of Mr. Edward Charles Healey to found the journal. Of particular interest at the present time is a leading article in the first issue entitled "The Mechanical Philosophy of Railways," which opened with the comment :

"Comparing our general system of steam locomotion, we are impelled to admit that the stewards of steam have done less with their ten talents than the stewards of animal power did with their one talent, whether commercially or mechanically. Had the system of horse traction been conducted with a tithe of the mismanagement existing on railways it must have resulted in universal bankruptcy."

What comment, one wonders, will our contemporary make one hundred years hence on the development of atomic power?

For very many years the sole ownership of *The Engineer* remained in the hands of its founder's family. Though this is no longer so, continuity has not been broken, for direct descendants of the founder are still taking an active share in the control of the paper.

In 1861 Mr. Healey took into partnership his elder brother, Mr. Elkanah Healey, who was one of the three original directors of *The Engineer Ltd.* upon the incorporation of the company in 1890, the others being the founder and his only son, Charles—subsequently Sir Charles Chadwyck-Healey, Bt. In 1929 *The Engineer Ltd.* amalgamated with Morgan Brothers (Publishers) Ltd. and a new company was formed, with Sir Gerald Chadwyck-Healey—eldest son of Sir Charles—as its first chairman and his brother, Oliver, as a managing director. Oliver Chadwyck-Healey is the present chairman of Morgan Brothers (Publishers) Ltd. and Charles Chadwyck-Healey, Sir Gerald's younger son, is the assistant managing director of the company.

On the editorial side the present editor, who succeeded his father in 1946, is a grandson of Vaughan Pendred, who occupied the editorial chair from 1865 to 1905. Three generations of the same family have therefore edited the journal over a span of 90 years.

The Price of "The Mining Journal"

With effect from this week, the price of *The Mining Journal* goes up from 8d. to 9d. per copy. While our decision to make this increase has been taken with great reluctance, we take some satisfaction from the fact that this is the first time the price of *The Mining Journal* has been increased during more than twenty-five years of persistent rising costs.

Since World War II our direct production costs have risen by almost exactly 100 per cent. These increases we have hitherto been able to absorb partly through more efficient operation and partly by virtue of our expanding volume of advertising. Now, however, we are faced in the coming year with heavy increases in direct production costs—in particular a rise in our printing costs of at least 15 per cent and possibly more. In these circumstances we have no option but to ask our readers to help us meet a portion of these increases.

The effect of the price increase will be to raise the annual subscription from £2 to £2 5s. Even so, we feel that this rate remains extremely moderate bearing in mind the high editorial standard which we aim to maintain and the fact that the subscription rate will continue to include at no additional charge a copy of the 300-page *Annual Review* edition published each Spring and which otherwise sells at 7s. 6d.

Australia

(From Our Own Correspondent)

Melbourne, December 30.

Gold output for W. Australia for 1955 will approximate the total recorded for 1954, which was 847,451 f.oz. Closing down of the Big Bell mine has been countered by development and mining of good grade ore by Central Norseman Gold Corporation, and Hill 50 Gold Mine, and by developments and increased tonnages of ore from the Kalgoorlie mines. On the last named field the cost position will be helped materially by the amalgamation of South Kalgurli, and Boulder Perseverance with Gold Mines of Kalgoorlie.

The ore reserve position in the industry is good; most mines have continued to develop, and to keep reserves four or five years ahead of the mill, although increasing costs have kept a substantial part of the lodes developed out of the reserve classification. The industry has continued to keep ahead of the many difficulties with which it has been faced, but it deserves, and should receive, much greater assistance and consideration from Government than it has received in the past. The State Government is to be commended for help given, but more can be reasonably expected from the Federal Government.

URANIUM PRODUCTION IN QUEENSLAND

It is reported that negotiations for the erection of a uranium treatment plant at the Mary Kathleen Mine, in the Mount Isa district of North Queensland, have been completed. For the past fifteen months intensive diamond drilling has been in progress, up to ten diamond drills having been at work. The uranium occurrence is on the side of a high range in rough country. No statement as to tonnage and grade of ore has been issued but it is believed that diamond drilling has indicated some 3,000,000 tons of ore with a grade better than 0.2 per cent uranium oxide. The deposit is workable by open cut mining. Interests in the Mary Kathleen Mine are Rio Tinto Ltd., with 51 per cent, Australasian Oil Exploration Ltd. with 39 per cent, and the Vendor Syndicate, comprising the discoverers of the deposit, with 10 per cent.

After work had advanced sufficiently to indicate the potentialities of the occurrence, the tentative objective was estimated to involve an expenditure of £A6,000,000. With the completion of later work, it is understood that Rio Tinto Ltd. considers that larger scale operations are justified, and the plans now cover the expenditure of £A8,500,000. The increased expenditure over and above the basic proposal will probably mean some adjustment in the relative share holdings. Provision of adequate water supply in that region is a major problem; rainfall is monsoonal, and rivers flow only in that season. Examinations over the past 12 months have shown that suitable sites for large storage and catchment exist.

Development of Turkey's Mining Resources

In 1954, when presenting the Government's' programme to the National Assembly, the Prime Minister of Turkey, Mr. Adnan Menderes, emphasized the importance attached to co-operation with foreign capital and technical knowledge in the industrialization of the country and in the exploitation of its abundant mineral resources. Recent legislation has been designed to encourage foreign capital and enterprise, while the law governing the operations of the Central Bank, which is the controller of Turkey's credit mechanism, has been amended to provide credit facilities for individuals and firms engaged in mining and industrial enterprises. The efforts taken by the Turkish Government to develop the natural resources of the country are described in the following article.

In his speech at the inaugural meeting of the Second Session of the Tenth National Assembly on November 1, 1955, President Bayar said that since the passing of the law for the encouragement of foreign capital, new and productive investments exceeding £T380,000,000 had been secured for Turkey. Local capital participating in these investments by way of partnership amounted to £T230,000,000.

EMPHASIS ON PRIVATE ENTERPRISE

A feature of the Government's programme of economic development is the increasing participation of private enterprise and capital in the industrialization drive. The work of the State economic establishments is also showing considerable development, but these undertakings are going into partnership with new enterprises formed with foreign and domestic private capital.

The Karabük iron and steel plants which are being greatly extended, have been separated from the Sümerbank and converted into independent State enterprises. A Bill to separate the Eregli coal mines and western lignite mines from the Etibank and convert them into independent enterprises is about to be presented to the Grand National Assembly. Thus the Sümerbank and the Etibank will become financing establishments for industries and mining enterprises instead of owning them.

Despite serious fire-damp, explosions and flood disasters, Turkey's lignite and coal production will reach a level which is above 1956 requirements. Efforts to carry out the Zonguldak development plan have been intensified. The Catalagzi washing plant, which has an average capacity of 18,000 tons a day, has started operations. The Zonguldak harbour washing plant will be completed in mid-1956, when it will come into operation.

Coal prospecting activities during 1955 have given very satisfactory results. It has been verified that the Seyit Omer area in Kütahya contains reserves of nearly 100,000,000 tons, while lignite deposits near Corum approach 34,000,000 tons. It is further claimed that the Bolu Province reserves exceed 30,000,000 tons.

In order to provide more favourable opportunities for foreign petroleum companies, the Petroleum Law has been amended. Up to October 14, 1955, 19 foreign companies had requested permission to carry out research and erect necessary installations. New and productive oil wells have been opened at Raman and Garzan by the Petroleum Corporation of Turkey, established last year. The most important units of the Batman refinery, which has a capacity of 330,000 tons, have been completed and put into operation.

In discussing the country's wolfram resources, the President said that the ore deposits discovered last year in the Ula-dag mountain area near Brussa were the fourth largest of the known deposits of the ore in the world. In addition, rich wolfram ore had been discovered at Celebidag in the Kaman and Hassa area; efforts are being made to determine the extent of these resources.

Since Turkey has long ranked as among the world's largest producers of chrome ore, the absence from the speech of any reference to this important export can scarcely be without significance. It will be recalled that Turkey's chrome ore exports declined rapidly in 1954, due to termination of U.S. Government contracts and to high prices, as compared with those of similar ores from other sources. By the end of August most of the larger chrome mines were reported to have stopped operations. A Turkish delegation sent to the U.S. to negotiate sales of Turkish chrome returned empty-handed, apparently because the Turkish Government refused to accept the prices offered.

This year there has been little news of Turkish chrome. In July it was reported that 9,000 tons of ore had been shipped to the U.S. from various Turkish ports and that negotiations were in progress with the U.S. for the supply of about $15,000,000 worth of chrome and manganese ores against deliveries of U.S. wool tops. Press reports from Istanbul in October stated that Turkey had received enquiries for chrome ore from the U.S., France, West Germany, Sweden, Yugoslavia and Italy, but that it would be impossible to conclude any contracts since the mines were short of explosives and other materials, while road transport was precluded by the scarcity of tyres for lorries. It was further stated that transport costs inside the country had almost doubled since last year owing to the shortage of spares and tyres for road transport vehicles. Clearly Turkey's chrome industry is for the time being in more or less complete eclipse.

Chrome ore exporters should eventually benefit from the current programme of road, railway and harbour construction. During the past four years £T1,129,000,000 has been spent on roads and bridges, while the construction of 1,300 km. of new railway lines has been started under a £T579,000,000 programme. Work is progressing on a number of harbours and it was anticipated that by the end of 1955 modern chrome and grain loading installations would have been completed at Iskenderun. The preparation of projects covering about 35 harbours and shelter anchorages has been given to a specialist firm. When all these harbours are in commission they will bring great relief to the country's economies.

IMMEDIATE AND LONG TERM EFFECTS

The efforts of the Turkish Government to accelerate the development of natural resources must have favourable long-term effects on the economy of this under-developed and long neglected country, but one of the immediate consequences is an unbalanced external trade. Imports rose from 1,488,000 tons in 1950 to 2,572,000 tons in 1954, largely due to the requirements of expansion programmes, and must since have further increased. Though exports doubled during the same period they fell away sharply in 1955, one reason being a poor harvest and another the decline in chrome shipments. This has led to the introduction of new foreign trade regulations, which presumably are intended only as temporary measures. A more disturbing aspect of the situation has been the Government's apparent unwillingness to implement the pact concluded with the U.K. Government for the settlement over a five-year period of Turkey's debts to U.K. exporters. However, the situation is now showing signs of improvement.

Recent Mineral Discoveries in Tanganyika

Earlier this century a gold rush to the Lupa district of Tanganyika focused attention on the area, but with the working out of the rich alluvials and with the decline in reef mining owing to the fixed price of gold, operations in the field fell to a low ebb. Recently, however, a new interest in this part of the territory has been promoted by a number of discoveries, described in the following article by our East African correspondent. The area in which these discoveries have occurred can be described as that lying between Lakes Rukwa and Nyasa.

Geologically the area is interesting because in it lies the intersection of the two main rift systems, the Gregory Rift and the Western Rifts. The town of Mbeya, at 5,600 ft. elevation, lies in the middle of this intersection. Immediately north of the town the Mbeya Range rises to 9,300 ft., while across the rift to the south-east volcanic ranges culminate in the peak of Mount Rungwe at 9,700 ft.

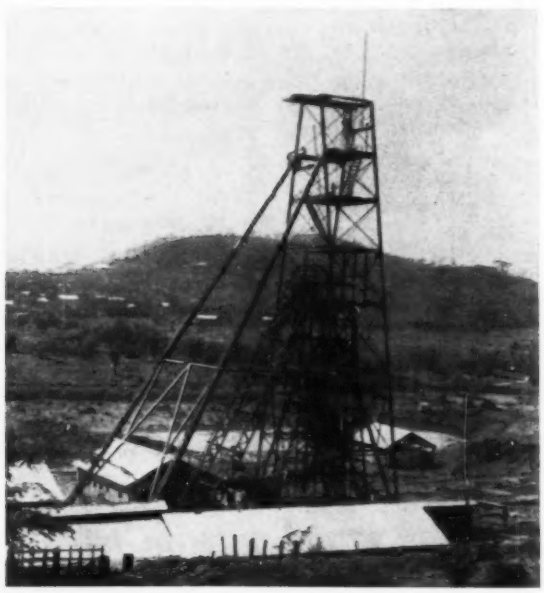
SPATE OF ACTIVITY

In this area of intensely faulted and disturbed country a number of discoveries have been and are being made. The first of these was the carbonatite at Panda Hill, which was found to contain pyrochlore in unusually large crystals. Investigations by the Geological Department soon showed that here was a large and valuable orebody.

The deposit was taken up by the Billiton Group who, in partnership with the Colonial Development Corporation, formed the Mbeya Exploration Company. The new company entered the field in April, 1955, and within three months had a small but quite elaborate pilot mill and several diamond drills at work. The results to date have been satisfactory, and Stage II of the operation is about to be put into effect. This will be the installation of a large pilot mill, probably of 100-200 tons a day capacity.

The company also hold Sengeri Hill which is another niobium-bearing carbonatite occurrence a few miles distant. Although the airborne scintillometer has shown a strong "kick" over the occurrence, there has not yet been time for this deposit to be investigated.

Stimulated by the development of Panda Hill, the Colonial Development Corporation have sent a team into the field to explore the Kivira-Songwe coalfield, which lies near the head of Lake Nyasa. This field has been neglected in the past owing to its remoteness from rail communications; but now, with a large potential demand for power for the exploitation of the pyrochlore, and with its proximity to the lake, the coal has suddenly become of economic interest.



Mining enterprise in Tanganyika was well illustrated when the new headgear on Main Shaft, Mpanda, was built around the old shaft with the latter still in commission

Following the discovery of Panda Hill, which lies on the North-South Road connecting Broken Hill with Nairobi and Dar-es-Salaam, another niobium-bearing carbonatite was discovered at Ngualla. This, however, is in more inaccessible country to the east of Lake Rukwa. The deposit has now been taken up by the Anglo American Corporation, who have spent some months building a road into the area. The road is now completed, and the investigation of the deposit has started.

The Anglo American Corporation have also done a considerable amount of reconnaissance with an airborne scintillometer, not only in the Mbeya District, but over much of the territory. They have established an office at Tabora, with resident geologist, and are preparing to prospect in a big way.

An enterprising prospector, Mr. H. Vogt, has also been flying a scintillometer in the Mbeya area, in a small aircraft piloted by himself, and in two places he has found radioactive anomalies of surprising intensity. Exclusive Prospecting Licences have been granted over the surrounding areas, and the prospector is now investigating his discoveries on the ground.

The awakening of mining interest in this part of the Southern Highlands of Tanganyika brings the question of communications once more to the fore. Mbeya is 300 miles by a not very good road from Itigi, the nearest point on the railway, which is itself 400 miles from the port of Dar-es-Salaam. A new trunk road has recently been completed connecting Dar-es-Salaam and Iringa, and this brings Mbeya within 560 miles of Dar-es-Salaam.

NEED FOR CLOSER COMMUNICATIONS

If Mbeya is to become the centre of a large mining industry, as is now beginning to seem possible, these communications will still leave much to be desired. Some years ago a survey was made of the freight potential of a major rail link which, it was proposed, would connect Broken Hill in Northern Rhodesia with a point on the Central Line of Tanganyika. The route passed through the Mbeya "Gap". It was at that time decided that such a link was not warranted, but the recent mineral discoveries in the Mbeya region, if they fulfil this early promise, may render this decision worthy of reconsideration.

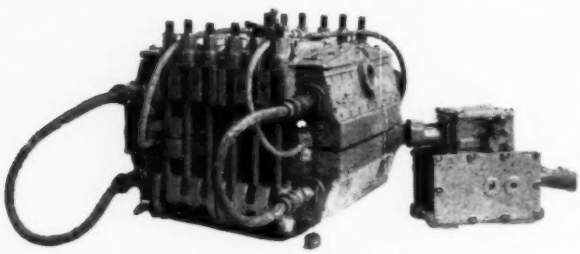
In other parts of the territory mineral exploration is being actively conducted. Some 35 miles south of the Mpanda Lead Mine, Katuma Mining Ltd., a subsidiary of the Patino Group, are drilling on another lead occurrence.

The latest discovery was made last month by a member of the Geological Department. While searching for a carbonatite occurrence south of the Uluguru Mountains (which search, by the way, was successful), he found indications of monazite. Preliminary investigation shows that the deposit is distinctly interesting, but work has now to be suspended owing to the rainy season, and it will be many months before the value of this deposit can be assessed.

Underground Vulcanizing of P.V.C. Belting

The equipment designed and manufactured by Greengate and Irwell for the underground vulcanizing of india rubber and canvas belting has been modified to meet the specific requirements of P.V.C. belting. The following article, extracted from University of Durham, King's College, *Mining Bulletin*, Vol. 8, No. 3, describes the manufacturers' F.L.P. Vulcanizer, designed for the underground vulcanization of P.V.C. belting.

The vulcanization of india rubber and canvas belting underground with flameproof equipment has for several years been practised in many collieries, the first F.L.P. Vulcanizer having been designed and manufactured by Greengate and Irwell as long ago as 1947. With the introduction of P.V.C. Belting, which requires a somewhat



Vulcanizer and control box

different technique, it has been found necessary to modify and re-design vulcanizing equipment. The first underground vulcanization of P.V.C. Belting was carried out at a Durham colliery in 1955, using the manufacturers' specially designed F.L.P. Vulcanizer.

THE VULCANIZING EQUIPMENT

The vulcanizing equipment comprises the vulcanizer and the control box. The dimensions of the former are 3 ft. 11 in. x 4 ft. 4 in. x 3 ft. 4 in. high. It consists of top and bottom self-contained heating platens 36 in. x 40 in. wide capable of taking a belt up to 36 in. wide and vulcanizing a length of 36 in. at each operation. In each platen are tubular type heating elements which distribute heat uniformly over the platen surfaces. There are cooling ends attached to each end of the platen for the purpose of preventing the flow of heat along the belt, which would result in the softening of the P.V.C. with consequent ply separation.

The platens are designed so that by blowing compressed air through a series of internal tubes, cooling down after vulcanization can be expedited. Should no compressed air be available the vulcanizer is allowed to cool down normally, but the time of making each joint would be longer.

Terminal boxes are fitted to the ends of the platens, in which bus-bar connections to the heating elements are made. The bus bars are connected to 30-amp. plug and socket connections, so that flexible cable connections can be made between the platens and the control box. One top terminal box also houses a temperature indicator and controller behind a removable armoured plate glass window. This window can be removed so that the controller can be set to the desired vulcanizing temperature.

Accurately machined top and bottom crossheads of substantial design receive the platens and heavy swing bolts are fixed to enable sufficient pressure to be distributed over the entire belt surface being vulcanized. Lifting lugs are provided in the top crosshead for lifting the top portion when inserting the belting.

The complete vulcanizer weighs 2¼ tons, the heavy weight being necessary in order to ensure that there is no deflection in either the crossheads or the platens when tightened down. Should any deflection occur, sufficient pressure might not be exerted on the centre of the belt with detrimental effect on the quality of the joint. The vulcanizer can, however, be split into two halves, top and bottom, in order to facilitate transport in-bye in cases where roadway size is restricted.

FLAMEPROOF CONTROL BOX

The control box is a flameproof container in which the following components are mounted :

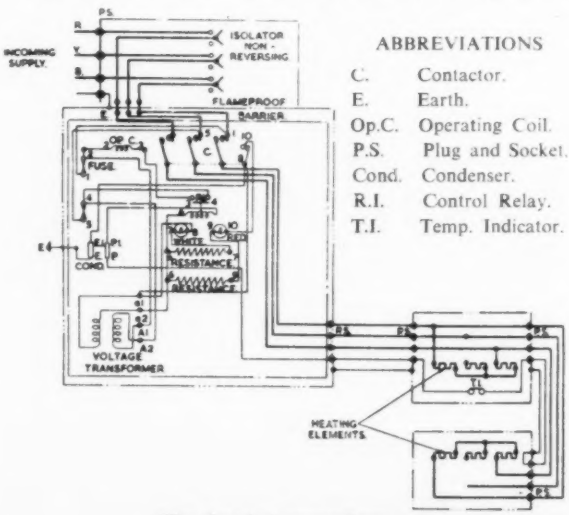
(a) An 80-amp. non-reversing isolating switch;
(b) An 80-amp. 3-pole contactor complete with one auxiliary contactor normally closed, used in the indicating lamp circuit;
(c) A potential transformer;
(d) An overload relay;
(e) A condenser;
(f) Two 12 v. 3 w. indicator lamps with resistances, one white and one red.

The box is coupled to the vulcanizer by means of a flexible cable with 30-amp. plugs and sockets and to the supply by means of a trailing cable and 100-amp. B.E.S.A. plugs to a standard gate end box. A supply of 400/600 v. 3-phase, 50 cycles power is suitable. When the power is switched on, the platens begin to heat up until the temperature, to which the indicator in the vulcanizer has been set, is reached. During this period the white lamp indicates that the current is flowing.

As soon as the determined temperature is reached, the controller opens the pilot circuit and the power is automatically cut off, the red light indicating this fact. After a fall of 3 deg. F. the power is automatically switched on again, so ensuring that vulcanization takes place within these narrow limits of temperature.

The load taken by the vulcanizer when power is applied is approximately 20 kw. (10 kw. per platen).

In making a joint with, for example, a 6-ply belt 3 in. wide, the length of the splice to be made (normally 60 in.)



The electrical connections

Treatment with P.V.C. paste

is measured off from the end of the belt. This distance is determined by a 20 in. bias and 5 steps each 8 in. wide.

Each step is then marked off in turn and the plies stripped back in 2 in. wide strips for ease of handling. The completed portion is then used as a template to mark off the other half of the joint and the procedure is repeated. Both the exposed surfaces are then buffed with emery cloth to roughen them.

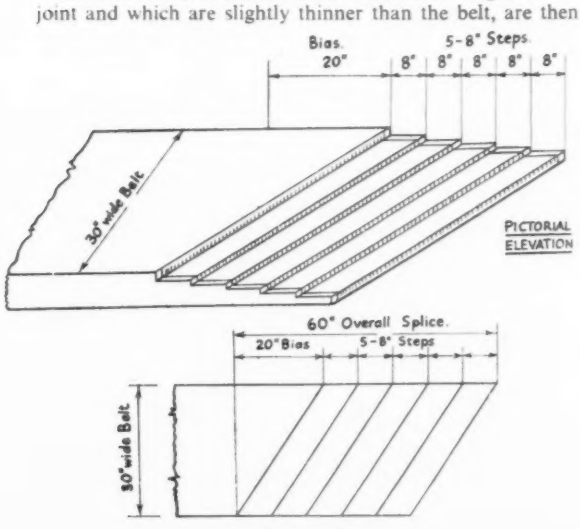
Having completed the preparation of the two ends, they are treated with a special P.V.C. paste which is rubbed in with a very stiff brush. A thin sheet of P.V.C. is then laid over one end extending slightly over each end of the splice and rolled down by hand to remove all air.

The other end is then laid over the P.V.C. sheeting and care is taken to see that the two halves of the joint are in perfect alignment with the rest of the belt and that each step fits perfectly into the other, making sure that there is no overlapping of the steps. The extended ends of the P.V.C. sheet are then cut flush with the ends of the joint. The assembled joint is then clamped together and is ready for vulcanizing.

THE FINAL OPERATION

The complete splice is then positioned in the vulcanizer which has already been heated to 150 deg. F. and a check made to see that the joint has not moved.

The side bars, which are used to form the edges of the joint and which are slightly thinner than the belt, are then placed in position down each side of the splice and the top crosshead of the vulcanizer lowered on to the joint. Screw pressure is applied and the temperature raised to 320 deg. F. for 10 min.



Length of splice

The vulcanizer is then switched off and cooling air is circulated through the platens to reduce the temperature to 210 deg. F. before releasing the screw pressure. The bolts are then released, the top crosshead lifted up and the first charge is then complete. As this point requires two charges the same procedure is repeated. The joint should be allowed to cool for several hours before being put to use.

COMPARISON WITH RUBBER BELTS

The main difference when vulcanizing rubber belts is that a temperature of only 287 deg. F. is required and there is no need to cool the joint before releasing the pressure, whereas P.V.C. requires 320 deg. F. and must be cooled under pressure to 210 deg. F. in order that it may set.

Approximate Time Cycle for One Complete Joint of 6-ply 30 in. Belting

	Hrs.	*Mins.*
Preparing and Stepping both ends	2	30
Pasting and Setting Joint in Vulcanizer at 150 deg. F. and applying pressure	0	30
Building up temperature to 320 deg. F.	1	15
Vulcanizing time at 320 deg. F.	0	10
Cooling to 210 deg. F.	0	35
Resetting joint for second charge	0	25
Building up temperature to 320 deg. F.	1	0
Vulcanizing time at 320 deg. F.	0	10
Cooling to 210 deg. F.	0	35
Total	7	10

It will be seen that about 7¼ hours is required to complete a joint requiring two charges. Wider belts requiring three charges would take about 9½ hours to complete.

Portugal

(From Our Own Correspondent)

Foz do Douro, December 19.

There is little to report in the way of news. Once again the market has been upset by the rise in the price of Tungsten Ores from 240s. to 270s. October shows a slight improvement over September as regards exports of Cassiterite. Tungsten Ores show a decline. Haematite is less and Magnetite more than September exports. Exporters of Cassiterite obtain no benefit by the increased price as local buyers for local smelting pay the same price as would be obtained if the ore was exported, with, evidently, the advantage of immediate payment on delivery of the goods in buyer's warehouse. The presence has been reported of buyers representing well known British firms. It is also reported that some long-term contracts have been made.

Export figures for October were (in tonnes): Tungsten bearing material, 364 (includes about 60 tons of residues); cassiterite, 36; cupreous pyrites, 24,783; haematite, 9,459; magnetite, 11,528; tin metal, 15; white arsenic, 46.

Production figures for August were (in tonnes): Beryl, 29; lead, 184; cassiterite, 129; mixed cassiterite/ilmenite, 7; mixed cassiterite/scheelite, 10; manganese, 270; haematite, 22,080; magnetite, 4,119; molybenum, 4; gold/silver bearing concentrates, 244; tantalite/columbite, 2; wolframite, 314; scheelite, 42; mixed wolframite/scheelite, 45.

A Heavy Duty Quarrying and Mining Excavator

The resources of Ruston-Bucyrus and their American Associates, Bucyrus-Erie, have been directed for over three-quarters of a century almost exclusively to the design, development, production and application of efficient earth-moving equipment. During this time the two companies have acquired a wide experience of the problems and difficulties arising from the application of power shovels to earth-moving. It is because R-B and B-E have amassed this knowledge that it has been found possible to interpret this in a practical manner by producing excavator designs of the future, capable of dealing with the changing trends of techniques in open-cast mining and quarrying. While this has sometimes represented a departure from the conventional practice of the period, the fact that it has subsequently become standardized for similar machine has more than justified the company's original interpretation. It is against this background that the latest contribution of these two companies ought to be examined. Designated the 110-RB, the unit is described in the following article.

The 110-RB 4½ cu. yds. heavy-duty mining and quarrying excavator has been designed from tracks to teeth for outstanding strength to obtain maximum efficiency under all types of conditions.

But before dilating on certain of the features which increase the machine's efficiency by reducing the cycle of operations and maintenance time whilst sustaining output, it will be of interest to record that there are seven of these units operating in Europe at the present time. One is in a chalk quarry at Maastricht, Holland, worked by E.N.C.I. Another—a dragline version—excavating brick clay for the Marston Valley Brick Co. in Bedfordshire, has a 100 ft. boom giving an 85 ft. dumping radius enabling it to excavate at a depth of 50-60 ft. The illustration on this page shows this machine in operation loading clay into a storage hopper from whence it is control dumped into tubs working on an endless haulage system.

A third 110-RB is in a limestone quarry in Solvay, France. Two more are in Sweden, one at Halikis with the Skanska Cement Co., the other at Gimgol with Forsby Kalkbrotl. A sixth unit is in Finland while the seventh is at Grays, Essex, working for the Tunnel Cement Co. It is understood that more units will be operating in North Central Sweden near Falun shortly.

It is obvious from consideration of the varied tasks already being accomplished by the 110-RB 4½ cu. yds. shovel, that its applications are widespread and, indeed, front end equipment can be suited to the specific requirements of a particular job. The change over between shovel and dragline equipment can be effected with the minimum loss of output.

FEATURES OF DESIGN

One of the features of the design which increases efficiency and sustains output is the caterpillar mounting which is designed for work in rough conditions. Provision is made for split-second interchange between digging and travelling, while power steering is controlled from the operator's position and extra wide caterpillar links are provided for dragline service. Selective heat treatment and the use of special alloy steels in construction, together with the use of anti-friction bearing and gear enclosures wherever practicable, reduce maintenance time and costs. Power is by direct transmission, reaching the dipper by the most direct route. The propel drive is mechanically independent of the shovel hoist, although the same motor is used for both motions. There is independent motor powering of the hoist and drag motions of the dragline.

The shovel boom lower section, subject to the greatest loads, is rigidly attached to the base machine and wide-spread feet eliminate sway braces. The upper section carries the hoist and swing loads only, permitting the use of a longer, relatively light weight unit. The crowd machinery is mounted on the superstructure and, with

110-RB Ward-Leonard electric dragline with high vision cab, 100 ft. boom, 85 ft. operating radius and 4 cu. yd. bucket, excavating brick clay from a 60 ft. face.

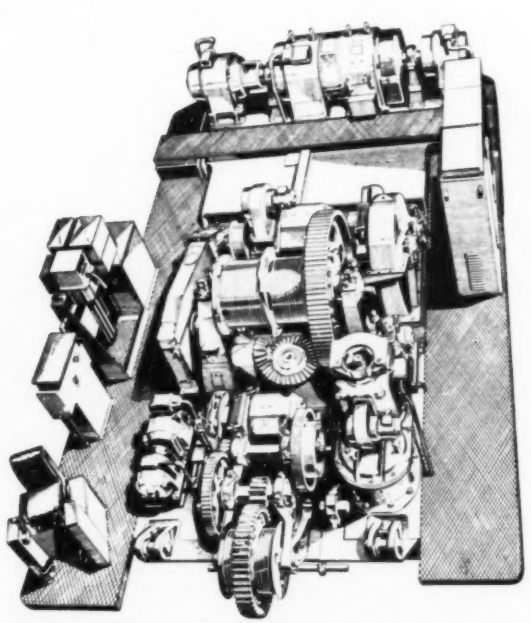
The two-section boom and tubular dip handle are a new conception of shovel front-end equipments

front end weight and swing loads reduced, greater ranges and faster cycles result.

Finally, in so far as the dipper is concerned, double twin hoist lines attached to the dipper sides give a superior digging stroke and in addition free the dipper mouth from obstruction.

UNIQUE SHOVEL EQUIPMENT

Apart from the marked interest aroused by consideration of the 110-RB, the design of shovel equipment constitutes a new departure for this class of machine. Yet here again the equipment is well tried, having been employed for a number of years on large stripping shovels of up to 36 cu. yds. capacity. In this quarry and mining excavator a number of features have been correlated to produce an efficient shovel design.



Illustrative sketch of shovel machinery. For dragline service the basic layout remains the same with the addition of dragline hoist unit comprising drum and motor

110-RB Ward-Leonard electric shovel during rock loading operations. The site is a limestone quarry

In the exclusive, two section boom, the lower section is of braced box girder construction and is tied to the A-frame head by large-dimension H-section members and thus in effect becomes a part of the machine instead of an appendage. The upper section, subjected only to those loads imposed by hoisting the dipper and by swing acceleration and deceleration, is of relatively light weight and greater length with resultant reductions in swing loading and more efficient application of digging effort.

A large-diameter, heavy section tube forms the dipper handle, the saddle block is a long steel casting designed for the handle and mounted on bearings straddling the concave-faced, shipper-shaft drum supporting the handle. The attachment of twin hoist lines to either side of the dipper eliminates the conventional bale.

Conversion in the field from shovel to dragline or vice versa can be speedily effected, as the 110-RB has been developed with this specific aim in mind. With an appropriate change of lagging, the shovel hoist machinery becomes the dragline drag machinery. Tapered lattice type booms with a basic length of 80 ft. may be extended to 120 ft. by the insertion of intermediate sections.

The 110-RB is equipped with Ward-Leonard control of swinging, propelling and digging motions.

SHOVEL AND DRAGLINE SPECIFICATIONS

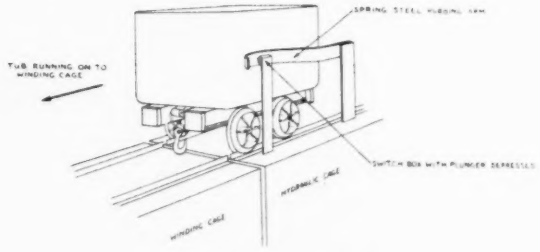
Specifications of the shovel equipment show a net domestic weight without ballast of approximately 132½ tons and a working weight, including ballast, of approximately 146 tons. Of these tonnages, the ballast—furnished by the operator—weighs 13½ tons. Working range dimensions are dipper capacity 4½ cu. yds., length of boom 36 ft., effective length of dipper handle 21 ft. 6 in. and overall length of dipper handle 25 ft. 10 in. The boom has an angle of 45 deg. Dumping specifications show a maximum dumping height of 23 ft. 3 in. and a dumping height at maximum radius of 15 ft. 9 in. Dumping radius at maximum height is 38 ft. 6 in. At the same time maximum cutting height is 34 ft. 9 in., maximum cutting radius 46 ft. 3 in. and maximum digging depth below ground level 9 ft. 3 in.

The dragline has a boom length of 80 ft., and net domestic weight without ballast but with bucket of approximately 128½ tons. Working weight, including ballast, is approximately 157½ tons of which the ballast supplied by the operator weighs 29 tons. Overall length of the caterpillar mounting is 19 ft. 4 in., normal propelling speed 0.80 m.p.h.

Recent Developments in the United Kingdom Coal Mining Industry

The following article maintains our practice of periodically presenting in abridged form those developments that have taken place recently within the coal mining industry of the United Kingdom. It is significant that an impressive percentage of these developments are the product of the experience of personnel of the British coal mining industry.

Among the recent developments to have taken place within the British coal mining industry, is a simple device to ensure that winding does not begin until tubs have cleared the hydraulic lifts, which has been developed at Cadeby Main Colliery, Doncaster. Work on this problem was prompted by the fact that in the past there has been serious loss of output when tubs fouling between the cage and hydraulic lifts have caused stoppages.



The tub warning device

Fouling occurs if a clear signal is given to the winder when a tub has failed to clear the hydraulic cage after ramming. With the new device a light at the onsetter's level gives warning if any tub has failed to clear the cage.

To accomplish this, an arm of spring steel is fitted to the side of the hydraulic cage. This arm makes contact with the side of the tub, and maintains contact during ramming until the tub is clear of the hydraulic cage. While the arm is in contact with the tub it depresses a switchbox plunger which completes the circuit containing the lamp. Not until the tub is clear is the circuit broken and the onsetter's warning light extinguished. A switch is provided on each deck, and these are wired in parallel. If, after ramming, any tub on any deck is not clear within the margin planned by the presetting of the spring arm, the warning light remains on.

PREVENTING DAMAGE TO BELTING

Another recently-designed device halts the motor of a conveyor if the belt runs out of true on the return roller. This device has been developed at Markham No. 2 Colliery in the East Midlands Division, N.C.B. The object of the device is to prevent damage to belting if it should run over the edge of the return roller.

On either side of the roller a pivoted arm is mounted, the working side of the arm being located on a line beyond which the belt should not be permitted to go. If the belt does cross this line, the pivoted arm is pushed inwards. This closes an electrical circuit which automatically stops the conveyor motor before the belt runs far enough off the roller to be damaged.

Another unit developed at the same source is a drill rig device which allows high speed drilling to be undertaken in rock heads where compressed air is not available. The device consists of an adaptation of the mounting of a Victor Power Feed Drilling Machine and bar to fit the Joy Sullivan Hydro Boom mounted on a Joy Loader. This enables electric rotary drilling to be used with the Joy Boom, which is normally fitted with a compressed air percussive type of drill.

LIGHTING A NEW UNDERGROUND ROADWAY

At the Madeley Wood Colliery in Shropshire, a new main locomotive haulage roadway is under construction which will eventually enable the output of the colliery to be increased considerably. The completed roadway will be 2,500 yd. long, extending from the pit bottom to the coal faces, with intermediate loading points. The roadway is situated approximately at the 1,000 ft. level and its 14 ft. width can accommodate two tracks with ease. The increased output, much of which is high grade household coal, will be achieved by greater speed of haulage and the more efficient use of available manpower which the roadway makes possible. With its known reserves of 16,000,000 tons of coal, the life of the colliery, even at the increased rate of production, is assured for many years.

The lighting for the new roadway, which now extends more than 1,500 yd. from the pit bottom, has been supplied by The General Electric Co. Ltd. Mines dustproof roadway fittings are mounted 9 ft. above rail level at 30 ft. intervals, except in the locomotive garage and at loading points where higher illumination levels are required. Each fitting houses in a dustproof Perspex cover one 110 v. 2 ft. 20 watt Osram "Daylight" fluorescent tube. The fittings are suspended from the 10 ft. high arch girders by clips and 6 in. lengths of 3/16 in. steel chain. This arrangement enables the positions of the fittings to be adjusted, and also relieves them of any stress which may occur as a result of arch movement.

The results of photometer tests at rail level show that the intensity of illumination directly under the fittings is 2 lm./sq. ft., the average value throughout the roadway being 0.75 lm./sq. ft.

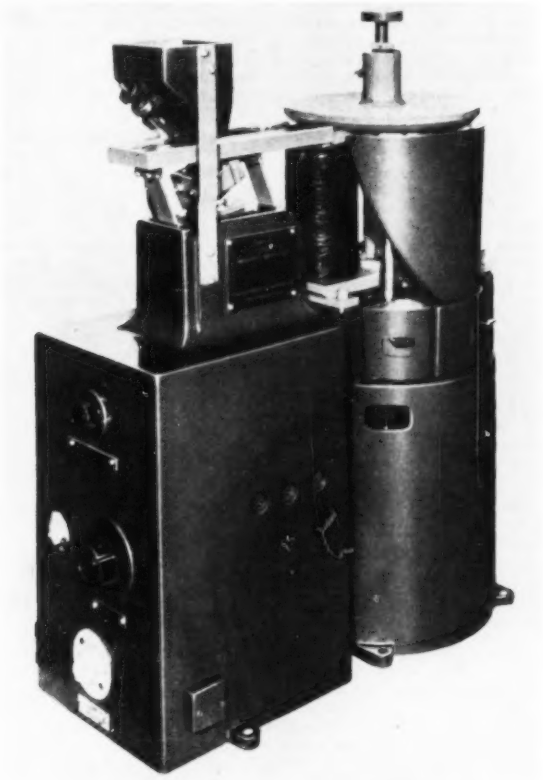
Power for the lighting is obtained from 2 kVA, 3,000/110 v. transformers of the two circuit type. The transformers are installed at 500 yd. intervals in the power cable run, and each circuit supplies 25 fittings.

G.E.C. dustproof fluorescent fittings at Madeley Wood Colliery

MACHINERY AND EQUIPMENT

A New Laboratory and Prospecting Magnetic Separator

Since the construction of the original prototype of the Davies Model 45 Laboratory and Prospecting Magnetic Separator firm orders already have been accepted for despatches to Malaya, Nigeria, Indonesia, Sierra Leone and the United Kingdom.



The Davies Model 45 magnetic separator

This is of particular interest, as *The Mining Journal* understands that as yet no general mention of this equipment has been made through any source. It seems apparent, therefore, that where laboratory scale separations are to be carried out either in the field or in the assay department, the utilization of the Model 45, manufactured by Davies Magnet Works Ltd., will possibly become a highly important feature. The equipment operates immediately upon connection to A.C. mains single-phase 50 cycles, but alternative wirings can be made available. No ancillary equipment of any nature is required.

The Model 45 magnetic separator has been specifically designed for the high powered testing of mineral samples both in the assay laboratory and on prospecting duties, being suitable for the testing of all samples with susceptibilities ranging from that of magnetite to monazite. The unit is of compact design and is mounted on an all-cast bed. Selenium plate rectifiers are incorporated for magnet energization, controlled by a finely graduated rheostat operating in conjunction with a mounted ammeter. The magnet strength can also be varied by finger-tip gap adjustment control which is closely calibrated.

The robust feeder is of electric design, the operating rate being infinitely variable through a graded rheostat. No cams, eccentrics, or belts are employed, thus completely eliminating breakdown and mantenance possibilities. The take-off disc is operated by a totally enclosed direct coupled geared motor drive with the disc supported by twin heavy ball races to ensure perfect alignment throughout the service of the machine. The Model 45 is supplied complete with alloy cast bins for the collection of magnetics, middles, and non-magnetic products. All magnet coils are wound and impregnated for continuous rating under tropical conditions.

Consideration of the specifications of the Model 45 reveals that the mesh range averages 20 mesh B.S.S., and that the feeder is 3 in. in width, while the take-off disc is 10 in. in dia. The disc drive is of ½ h.p. direct coupled geared motor internally mounted. Mains supply is 350 w.—220/250 v. phase cycles as mentioned. This unit is 12 in. wide, 25 in. long and 30 in. high. Its net weight is 196 lbs.

Engineering Agreement in South Africa

An agreement, covering the manufacture in South Africa of certain types of heavy gearing, has been completed by The Vanderbijl Engineering Corporation Ltd. (Vecor) of Vanderbijl Park and David Brown Precision Equipment (Pty.) Ltd., of Benoni, Transvaal.

Under the terms of the agreement all the Vecor gear-cutting equipment has been transferred to the David Brown factory. Vecor will produce castings and carry out the machining of all heavy gear and pinion blanks for both companies, and will also be responsible for the marketing of all products covered by the agreement. Outside the scope of the agreement each company will operate independently in the production and marketing of its other products.

Heavy Duty Crawler Tractor

A heavier duty version of the Fiat crawler tractor, Model 55L, has recently been announced by Mackay Industrial Equipment Ltd. This model will be known as the Fiat 55LI, and it incorporates the results of experience gained with the Fiat 55L in all parts of the world.

The Fiat 55LI has many new features. These include a completely cased in front idler of greater diameter and rim width than that of the Fiat 55L, while there is a larger area of ground contact, there being one more shoe per track than on the 55L. The unit also is equipped with new counter-bored interlocking type track links, and the track-frame is braced internally for greater strength. The track rollers are fitted with bellows type seals. In addition, the mounting and the guides of the idlers are improved and reinforced. All adjustments of track alignment are easily accomplished, and the mounting of the track recoil springs has been reinforced.

The Fiat 55L attained great popularity in Britain as a Class IV tractor, its high drawbar pull and low ground pressure having made it ideally suited to heavy and wet conditions. Many of the improvements incorporated in the Fiat 55LI are designed specifically to make its performance and endurance in these conditions even more impressive than that of the 55L.

The Fiat 55LI crawler tractor

METALS, MINERALS AND ALLOYS

COPPER.—Apart from a certain quietness as the holiday season approached—and that after all was inevitable—copper has been extremely firm in the United States, particularly in the early days of the year. Before the holiday buyers were quite prepared to pay 50 c. per lb. for January copper but were trying to avoid commitments past that month; the producers were still sticking to 43 c. This week the custom smelters have been taking plenty of orders for first quarter copper, and there are even reports that metal from this source is becoming short for the second and third month. Meanwhile the dealers have now pushed their price up to 52 c. for the entire first quarter. The reasons for this further hardening are a spate of reports on the shortage of copper in the first quarter, but more especially the continuance of the Chilean strike after a hope of a settlement had arisen.

The hope arose from a Press conference at which President Ibanez was credited with saying that he had decided to ask Congress for more time to draft the copper statute. That was on New Year's eve; but although it was said that high-level talks were going on it has still not produced a settlement. The message suggested that January 2 might see a settlement and it was January 3 that American copper appreciably hardened in sentiment.

Whatever the President had in mind is not known. An earlier message had said that the copper statute had been approved by the Senate at the end of the Old Year, while throughout the strike the Government had maintained that there could be no talks with the strikers until they had returned to work. It may be that the Government's resolution is slipping. It has not in fact carried out many of its threats. The power to conscript the strikers has not been used and not all of the strike leaders have been arrested. An attempt to recruit alternative workers has not been very successful; this is not surprising since men are unwilling to throw in their lot in a dispute with a side that is not looking a likely winner and it is not clear who is expected to recruit the companies or the military.

The United Labour Central has apparently agreed to give financial help to the strikers but is not prepared—as yet—to join the strike. It is probably the fear that this strike could boil over into something much bigger that is inducing caution in the Government. The strike began on December 14 and is costing 1,200 tons a day.

Copper ouput in Chile in 1955 reached 390,979 tons against 324,652 tons in 1954; this represents an increase in output of 20.4 per cent.

A United States Commerce Department report has predicted that American 1955 consumption of refined copper would prove to be around 1,486,000 tons, a record for peace time. "Prospects for an augmented supply of copper in 1956 appear encouraging but are unlikely to be fulfilled in the first half of the year. New production at the Nevada properties of Kennecott Copper and the Magma Copper Company at San Manuel, Arizona, are expected to add some 7,000 tons per month to the domestic supply of refined copper at full production. Despite the outlook for new mine production next year, it is anticipated that the first quarter of 1956 will see a continuing over-all shortage of copper because of the excess of demand over supply. This shortage is not expected to be so severe, however, as in previous quarters of 1955."

American export quotas for the first quarters have been announced and do not differ from those of the last quarter of 1955. They are: 3,000 tons of new and old copper scrap, 6,000 tons of new and old copper-base alloy of 40 per cent copper and above, and 600 tons of copper-base alloy ingots and other crude forms. The following copper groups can be exported under open-end licenses; refined copper of foreign origin, except that produced from Canadian scrap; unrefined copper of foreign origin; and low grade copper scrap of less than 40 per cent copper content.

Kennecott Explorations (Canada) has acquired about 500 mining claims of New Brunswick and is now preparing a big diamond drilling campaign to see what is underground.

The Turkish Eti Bank which has very great mining interests is planning to expand facilities at Ergani and Murgul mines. Together these mines supply about 26,000 tons a year of which Turkey consumes about 9,000 tons.

A renewed effort to exploit copper in the Arctic areas of Canada is being made by Val d'Or Minerals which is to take up prospecting on the site of copper found by N.A.M.E. on the Coppermine River, about 27 years ago. The sum of $100,000 has been budgeted for this purpose in this year's programme.

LEAD.—The long awaited rise in the New York price of lead took place on December 29 when St. Joseph Lead raised its price to 16 c. per lb. and was immediately followed by the other producers. At that time the official close in London was £116 17s. 6d. and the news of the increase sent the afternoon price up to £118 5s. for current delivery lead. Lead continued to advance in London. The cause of the earlier rise in London was the strength of consumer demand and the need to attract supplies to a market which was rather denuded. The rise was eminently successful and apparently began to attract Mexican and other metal away from the United States where there was already a tight supply situation. This occurred as the commentators were saying that a price rise was inevitable but was not likely before the New Year; in fact the producers could not hold the price down any longer.

However, as the London price continued to rise it became clear that the advantage won for New York by the increase of ½ c. was rapidly evaporating and on January 4 American Smelting and Refining took the lead in the second advance of ½ c. The new price of 16½ c. was immediately consolidated by all other producers. The reaction in London was to raise the price of lead still further to a new peak for free dealings and within sight of the price of £131 which was the last quotation of the Ministry of Materials before control ended. One result of all this is that G.S.A.'s stockpiling activities are almost at a standstill. Another is that the protectionist case which is being argued again as Congress reassembles is rather weakened. But the answer to the real question—where will this competition between London and New York for spot supplies end—is anybody's guess. If there were any noticeable decline in the level of economic activity in Europe (none can be looked for on the other side of the Atlantic) the price of lead might just as rapidly fall.

Production of refined lead, deliveries to consumers and refiners' stocks were all down in November compared with October. However deliveries at 51,370 tons were the second highest in five years; stocks at 28,855 tons were the smallest reported for about four years.

Yugoslavia's lead output in 1955 was expected to reach 74,000 tons, a record amount and an increase of about 8,000 tons on 1954. This is approximately seven times greater than the pre-war figure.

TIN.—There has been much less interest in the tin market in New York in the last two weeks. The many factors which have contributed to the rise in tin on both sides of the Atlantic, but particularly in the United States, are still operative. Tin eased by almost a cent per lb. over the holiday period but more than recovered and now stands at 109.50 for spot straits metal. Consumers are still doing all they can to avoid buying in the belief that the price is unreal but are constantly being forced into the market to cover themselves. Like London, New York thinks that the course of tin prices is going to be erratic in the near future.

The view is generally taken that the talks between the Malayan communists and Tengku Abdul Rahman and Mr. Marshall have passed off very well in that the Malayan leaders have given nothing away and have secured from the communists an admission that they are the legal representatives of the Malayan people. The amnesty is now to be withdrawn on February 8 and an all-out attack on the communists is to be prepared. Since this attack is being launched with the blessing of Tengku Abdul Rahman it may receive more local support than some of the earlier drives. Meanwhile Tengku Abdul Rahman is on his way to London to discuss the programme for self-government, which he himself wants to achieve by August, 1957. It is interesting to see that Mr. Spencer, Minister of Economic Affairs of the Federation is to come to London to take part in the discussions. This appears to confirm that Tengku Abdul Rahman will ask for control of finance in advance of full self-determination. With both rubber and tin fetching high prices in 1955 (which was second only to 1951 as a trading year for Malaya) Tengku Abdul Rahman will be very conscious of his strength.

The flooding of a number of mines through heavy rain caused a big drop in Malayan output of tin concentrates in November to 4,993 tons from 5,273 in October. November's output of tin concentrates was therefore the lowest monthly production figure returned since April of last year.

There is still no news of Indonesian intentions towards the I.T.A. and no definite news of when the new Parliament will meet. It is going to be hard to get I.T.A. going before the ending of American stockpiling unless Indonesia makes some rapid move.

ZINC.—Zinc has been in good demand in the United States on the basis of 13 c. per lb., East St. Louis, for prime western grades. At the same time it has not yet managed to achieve the rise that has long been forecast. As in the case of lead the London price has risen to a level well in excess of East St. Louis when transit charges etc. are taken into account. The difference has been that the zinc market in America is not anything like so dependent on foreign metal as lead has recently become. It may be more attractive to sell zinc in London but vital supplies are not yet being drained away from the United States. Nevertheless the weight of opinion in the United States is still very much in favour of an increase quite soon and the fact that lead has been raised twice in the past month must lend encouragement. The only thing that might hold back a price rise is a falling off in consumer demand. There is, as yet, no sign that the American economy is faltering; on the contrary, in an election year it must be expected that the Administration will somehow keep it going at a high level. However, the Ford Motor Company has just announced that its Mercury division will cut production of cars "to reflect current market conditions" and the working force will be reduced by 2,450 to 15,868 employees. Other car manufacturers have announced that their output is being reduced, though mainly through reducing overtime workers. It should not be forgotten, however, that the 1956 car is designed to use appreciably more zinc than the 1955 model and there is not yet any need to panic.

Consumption of slab zinc in the United States in October was a record 97,400 tons and the total consumption in the 10 months of 1955 was 884,000 tons against 709,000 tons in the same period of 1954.

ALUMINIUM.—Preliminary data indicate that in the U.S. the 1955 output of primary pig and ingot exceeded that of 1954 by approximately 100,000 tons. An equally substantial increase in production is anticipated for the current year, during which more than 135,000 tons of new capacity will be placed in operation. Fabricating capacity still remains greater than pig and ingot availability, but the National Association of Purchasing Agents in its year-end industrial round-up records an output of 1,650,000 tons as a distinct possibility for 1956 and 2,000,000 tons by 1958. Four more new producers are considering plans for entering the industry and reports indicate that the three largest producers may enlarge their facilities beyond the plans already announced. As evidence of its faith in the growing demand and broadening market for aluminium, Alcoa, alone committed more than $80,000,000 last year for new smelting and fabricating facilities and will expend additional sums in 1956.

Consumers in the United Kingdom, whose hopes of increased supplies were severely diminished by the curtailment of Canadian production resulting from power shortages, start the year with an increase of 4.6 per cent in the price of Canadian primary aluminium, bringing the price of standard ingots to £179 a ton. This compares with £112 per ton at the beginning of 1956.

Increased production of primary aluminium is reported from several European countries. The Norwegian output for 1955 was 70,000 tons, but Norway—like Canada—has been hampered by a shortage of hydro-electric power following a very dry summer, which prevented production capacity from being fully used. Austria's Ranshofen aluminium plant further increased production to about 50,000 tons compared with 41,000 tons in 1954, but capacity working has not yet been reached.

ASBESTOS.—Canadian asbestos mining companies are reported to have produced the record total of 1,000,000 tons of asbestos in 1955. This achievement is the outcome of expansion programmes aggregating $75,000,000.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper market has fluctuated within narrow limits and there has been only medium interest. In Europe buyers are still on the look-out for bargains, but in America demand has tailed off on end-of-year considerations. The situation in Chile is still obscure, and it appears that the strikers have now shifted their ground after the Government had made a prompt settlement possible; with the holiday season now past, however, there may be more desire to return to work.

Tin has once again experienced a squeeze which has both raised the general price level and also increased the backwardation. It is thought that the reason for the recent movements is the small tonnage of metal shipped out of Malaya during past weeks, and with consumption still running at a very good rate the London price has had to rise to a level to attract tin away from the American market, and it is believed that the present state of affairs will continue for some weeks. On Thursday morning the Eastern price was equivalent to £831 per ton c.i.f. Europe.

With the supply of lead very restricted, the rise in the London price level before Christmas resulted in the American domestic quotation being raised to prevent Mexican lead being diverted to Europe. The demand on this side of the Atlantic, however, has proved such that the price has hardened still further and a second rise in America has followed. A number of people feel that this alternate increase in price is not yet at an end.

In zinc the increase in the London price has not forced the hand of the American producers, as the States do not rely to such an extent on imported zinc as on imported lead. It is understood, however, that producers in Europe are very well sold, and it seems possible that metal will be attracted eastwards across the Atlantic thus levelling out the two prices without the American quotation having to be advanced; a number of people feel, however, that as the U.S. lead price has been advanced a rise in their zinc price is probable, with a continuing strong market in London.

Closing prices and turnovers for eight days are given in the following table :—

	December 22		January 5	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Copper				
Cash	£390	£391	£394½	£395
Three months	£386	£387	£385½	£386
Settlement	£391		£395	
Week's turnover	3,750 tons		7,250 tons	
Tin				
Cash	£827	£830	£837½	£840
Three months	£808	£810	£815	£816
Settlement	£830		£840	
Week's turnover	1,125 tons		1200 tons	
Lead				
Current half month	£114½	£115	£124½	£125
Three months	£114½	£114½	£122	£122½
Week's turnover	5,375 tons		7,500 tons	
Zinc				
Current half month	£98½	£99½	£105	£105½
Three months	£96½	£96½	£102	£102½
Week's turnover	5,350 tons		8,000 tons	

OTHER LONDON PRICES — JANUARY 5

METALS

Aluminium, 99.5%, £179 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60% basis) 23s. 6d./24s. 6d. nom. per unit, c.i.f.
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 11s. 6d. lb.
Chromium, 6s. 11d./7s. 4d. lb.
Cobalt, 21s. lb.
Gold, 249s. 5½d.
Iridium, £29/31 oz.
Manganese Metal (96%-98%) £269 according to quantity
Magnesium, 2s. 4d. lb.
Nickel, 99.5% (home trade) £519 per ton
Osmium, £24/27 oz. nom.
Osmiridium, £40 oz. nom.
Palladium, £8 0s./£8 10s. oz.
Platinum U.K. and Empire Refined £32 10s. oz. Imported £42 0s./£42 10s. oz.
Rhodium, ££40/£42.
Ruthenium, £16/£18 oz.
Quicksilver, £88 10s./£89 ex-warehouse
Selenium, 72s. nom. per lb.
Silver, 78¾d. f.oz. spot and 78¾d. f d.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 60% 8s. 3d. c.i.f.
20% 3s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £15 2s. 6d. per ton c.i.f.
,, Refractory 45% .. £14 2s. 6d. per ton c.i.f.
,, Smalls 42% .. £12 2s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw .. .. £10-£11 d/d
Molybdenite (85% basis) .. 105s. 3d.-108s. 1d. per unit c.i.f.
Wolfram and Scheelite (65%) .. 272s. 0d./276s. 0d. c.i.f.
Tungsten Metal Powder (98% Min. W.) .. 21s. 3d. nom. per lb. (home)
Ferro-tungsten (80%-85%) .. 18s. 3d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £39 3s. 9d. d/d per ton
Ferro-manganese, home .. £54 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) basis 110s. freight.. .. .. .. 98d. per unit c.i.f.
Manganese Ore (43%-45%) .. 90d. per unit c.i.f.
Manganese Ore (38%-40%) .. 86d. per unit
Brass Wire .. .. .. 3s. 7½d. per lb. basis
Brass Tubes, solid drawn .. 2s. ¾11d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Kaffirs were again idle and although the French election results caused a rush to buy gold in Paris, Continental demand for shares in this group remained specialized. Among finance houses, the shares of Anglo American, whose quarterly reports are expected on January 16, improved. Elsewhere there were few major changes, with the exception of Johannesburg Consolidated. Here, a sudden demand caught the market short of stock and the price went ahead sharply.

Among individual Rand mines, the December returns were the dominating factor. While there were few major changes, outputs were generally satisfactory after taking into account the Christmas holiday period. The figures from Blyvooruitzicht proved disappointing and Consolidated Main Reef came back on the reduced profits. Doornfontein results held these shares steady but Hartebeestfontein failed to respond to the jump in profits. There was some quiet demand for New Pioneer, emanating from Johannesburg, and Randfontein encountered Continental buying. The good returns from West Driefontein caused these shares to gain ground despite the fact that they were quoted ex dividend.

In the Orange Free State, the start of production by Free State Geduld which should take place as we go to press, and the anticipation of further details in the near future, caused a revival of interest in these shares. Freddies Consolidated showed another large loss and the President mines and St. Helena were rather featureless. The chairman's report from Western Holdings proved encouraging and it is hoped here that underground development on the Free State Geduld property may assist Western Holdings during the coming year. Welkom again recorded an increase in profit despite lower milling and the shares returned to favour.

In the West African section the miners' strike, which has been going on since November, is now a serious factor. Ashanti recorded a December loss of over £68,000 and the Board of Taquah have warned the Gold Coast Government that if the strike is not over by January 16 they will, for economic reasons, be forced to allow the mine to flood. This could well mean the closing down of the property.

In the West Australian and miscellaneous gold groups, there was little of interest to report, but diamond shares, notably De Beers, went ahead in anticipation of the December quarterly figures. It is understood that the discovery of a new diamond field in South-West Africa, merits application for a mining lease from the local government. Potgietersrust Platinums also returned to favour and the shares reached a peak.

The continued strength of copper, coupled with American estimates of a stringency in metal supplied for 1956, caused almost all the leading producers to go ahead sharply. Chartered were particularly favoured and American buying of Rhodesian Selection Trust caused these shares also to advance. Roan Antelope rose in sympathy. Tanganyika Concessions were another good feature and there was further speculative demand for Rhodesia Katanga. Fresh news of the development of Rio Tinto interests in Canada, Australia and Rhodesia, brought in buyers for this go-ahead company.

Eastern tins were little changed alhough the undertone was firm on the improvement in the cash metal price. Demand was again highly selective. Nigerian issues remained quiet due to the uncertainty of local politics and the depressed price of columbite. Beralts at one time reached a peak of 41s. cum dividend on the wolfram outlook.

Lead/zinc shares were also a feature. Barriers went ahead strongly following the record level of the metal prices. The recommencement of smelting by Mount Isa brought about a recovery in these shares although coal stocks are far from satisfactory with the rainy reason now approaching. Hopes that Lake George will return to the dividend list in June caused buying of these shares. There was some American inquiry for San Francisco Mines. Rhodesia Broken Hill, being still under the influence of the disappointing interim distribution, recorded only a modest gain.

Canadians were very strong with sharp improvements among most of the leading base metal producers. One of the best features was Hollinger on the new Labrador and Quebec iron ore proposition.

Finance	Price Jan. 4	+ or — on week
African & European	2⅝	—¼
Anglo American Corpn.	8⅛	+⅛
Anglo-French	22/-	—6d
Anglo Transvaal Consol	27/6	.....
Central Mining (£1 shrs)	41/6	.....
Consolidated Goldfields	57/6	+3d
Consol. Mines Selection	36/10½	.....
East Rand Consols	1/9	.....
General Mining	4¾	+⅛
H.E. Prop.	7/1½	—1½d
Johnnies	40/3	+2/3
Rand Mines	3½XD	+⅛
Rand Selection	39/4½	+1/3
Union Corporation	45/6	—6d
Vereeniging Estates	4⅛	.....
Writs	36/10½	.....
West Wits	39/3XD	—6d
Rand Gold		
Blyvoors	24/6XD	—9d
Brakpan	6/3XD	—3d
Buffelsfontein	25/6	—6d
City Deep	10/9	.....
Consol. Main Reef	20/-XD	—1/10½
Crown	2⅞XD	—⅛
Daggas	2½XD	—⅛
Dominion Reefs	23/9XD	—6d
Doornfontein	22/6	.....
Durban Deep	30/-XD	—1/3
E. Champs	4/3XD	—3d
E. Daggas	9/9XD	.....
E. Geduld (4s. units)	30/3XD	—9d
E. Rand Props.	2⅝XD	—⅛
Geduld	4½XD	—¼
Govt. Areas	5/9XD	—6d
Grootvlei	22/-XD	—1/-
Hartebeestfontein	35/-	—3d
Libanon	7/4½XD	—3d
Luipaards Vlei	17/3XD	—3d
Marievale	21/4½XD	—1/1½
New Kleinfontein	5/6XD	—3d
New Pioneer	14/3	+3d
Randfontein	46/6XD	—1/3
Robinson Deep	15/-XD	—1/-
Rose Deep	10/-	.....
Simmer & Jack	3/10½XD	—1½d
S.A. Lands	21/10½	—1/3
Springs	3/3XD	—3d
Stilfontein	24/9XD	—3d
Sub Nigel	33/9XD	—1/10½
Vaal Reefs	29/3	—9d
Van Dyk	3/6	+3d
Venterspost	12/9XD	—6d
Vlakfontein	16/9XD	—9d
Vogelstruisbult	29/9XD	—9d
West Driefontein	5½XD	+⅛
Rand Gold contd.		
W. Rand Consolidated	36/3XD	.....
Western Reefs	35/-XD	+1/3
O.F.S. Gold		
Freddies	6/6	—6d
Freddies Consolidated	4/6	.....
F.S. Geduld	3¾	+⅛
Geoffries	14/-	—6d
Harmony	27/6	—3d
Loraine	6/6	+6d
Lydenburg Estates	15/6	—1½d
Merriespruit	10/3	—3d
Middle Wits	12/6	—3d
Ofsits	58/3	—1/-
President Brand	62/9	.....
President Steyn	33/3	+3d
St. Helena	27/-	+3d
Virginia Ord.	10/6	—6d
Welkom	17/-	+10½d
Western Holdings	3½	+⅛
West African Gold		
Amalgamated Banket	2/-	.....
Ariston	5/3	—1½d
Ashanti	20/3	—9d
Bibiani	3/6	—3d
Bremang	1/7½	.....
G.C. Main Reef	2/4½	—1½d
Konongo	2/-	—1½d
Lyndhurst Deep	1/4½	—1½d
Marlu	6dXR	—1½d
Taquah	1/6	+1½d
Western Selection	8/7½	.....
Australian Gold		
Gold Mines of Kalgoorlie	12/1½	—1½d
Great Boulder Prop.	10/9	.....
Lake View & Star	16/6	—6d
Mount Morgan	22/6	+3d
North Kalgurli	7/3	.....
Sons of Gwalia	3/3	.....
Western Mining	8/10½	+1½d
Miscellaneous Gold		
Cam & Motor	8/4½	.....
Champion Reef	5/6	—1½d
Falcon Mines	6/6	.....
Globe & Phoenix	26/-	+3d
G.F. Rhodesian	9/1½	+3d
Motapa	1/-	.....
Mysore	2/6	—3d
Nundydroog	8/-	.....
St. John d'El Rey	17/-	—3d
Zams	55/-XD	—1/10d
Diamonds and Platinum		
Anglo American Inv.	9½	—¼
Casts	26/3	+9d
Cons. Diam. of S.W.A.	7¾	.....
De Beers Defd. Bearer	6¾	+⅛
De Beers Pfd. Bearer	16¼	.....
Pots Platinum	12/6	+1/-
Watervaal	19/6	+1/9
Copper		
Bancroft	39/-	+3d
Chartered	77/6	+3/3
Esperanza	4/3	.....
Messina	9⅛	—⅛
Nchanga	15½	+½
Rhod-Anglo-American	5⅝	—⅛
Rhod-Katanga	34/3	+9d
Rhodesian Selection	49/6	+3/6
Rhokana	46	+½
Rio Tinto	3¾	+⅛
Roan Antelope	28/-	+1/-
Selection Trust	4⅜	+⅛
Tanks	8½	+⅛
Tharsis Sulphur Br.	5½	—¼
Tin (Eastern)		
Ayer Hitam	21/10½XD	+1½d
Gopeng	10/7½	.....
Hongkong	8/-	.....
Ipoh	22/-	.....
KanuKamunting	11/3	+4½d
Kepong Dredging	3/4½XD	—1½d
Kinta Tin Mines	18/-XD	—6d
Malayan Dredging	9/10½	+1½d
Pahang	12/9	—6d
Pengkalen	11/6	—3d
Petaling	10/1½	—3d
Rambutan	24/3	+6d
Siamese Tin	9/1½	+1½d
Southern Kinta	18/1½	+1½d
S. Malayan	9/-	.....
S. Tronoh	8/6XD	—3d
Sungei Kinta	18/3	+3d
Tekka Taiping	9/6	+6d
Tronoh	10/1½XD	.....
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	12/3	.....
Beralt Tin	39/-XD	—1/7½
Bisichi	6/4½	.....
British Tin Inv.	26/-	+6d
Ex-Lands Nigeria	3/-	—1½d
Geevor Tin	17/3	+3d
Tin (Nigerian and Miscellaneous) contd.		
Gold & Base Metal	1/9	—1½d
Jantar Nigeria	5/3	—3d
Jos Tin Area	15/-	.....
Kaduna Prospectors	2/-	.....
Kaluna Syndicate	3/-	+1½d
London Tin	10/-	.....
United Tin	1/10½	—1½d
Silver, Lead, Zinc		
Broken Hill South	58/9	+1/9
Burma Corporation	2/9	.....
Consol. Zinc	57/9	+1/6
Lake George	15/9	+1/9
Mount Isa	63/9	+2/6
New Broken Hill	46/6	+1/9
North Broken Hill	88/9	+5/3
Rhodesian Broken Hill	14/3	+6d
San Francisco Mines	31/6	+1/3
Uruwira	6/7½	+1½d
Miscellaneous		
Base Metals and Coa		
Amal. Collieries of S.A.	47/-XD	—2/4½
Associated Manganese	35/1½XD	+4½d
Cape Asbestos	9/9XD	—4½d
C.P. Manganese	32/-	.....
Consol. Murchison	65/7½	+7½d
Natal Navigation	3XD	—⅛
Turner & Newall	115/6	+5/6
Wankie	18/4½	.....
Whitbank Colliery	5¼	.....
Canadian Mines		
Dome	$29XD	—½
Hollinger	$43½	+6
Hudson Bay Mining	$120	+5½
International Nickel	$150	+3
Mining Corpn. of Canada	£8⅛	+⅛
Noranda	$101½	+7½
Quemont	£9¼	.....
Yukon	4/1½	—1½d
Oil		
Apex	32/3	.....
Attock	40/6	—3d
British Petroleum	5½	+¼
Burmah	3¾	+⅛
Canadian Eagle	58/6	+1/9
Mexican Eagle	23/6	+3d
Shell	7⅛	+⅛
Trinidad Leasehold	37/-	+2/-
T.P.D.	26/3	.....
Ultramar	37/9	.....

COMPANY NEWS AND VIEWS

Anglo American Group's Progress in the O.F.S.

Six Anglo American Corporation Orange Free State gold mining companies have published reports and accounts for 1955. As was recently announced the financial years of these companies were changed for administrative reasons to September 30 instead of December 31—the date which applies to the remaining companies of the group. In consequence the latest reports reflect operations over a period of nine months only.

Broadly speaking, what Mr. H. F. Oppenheimer, their chairman, had to say about development progress achieved creates a favourable impression. Shareholders must, however, still wait patiently for the most fascinating news of all—soon due to be disclosed—concerning the enriched area on F.S. Geduld's southern border.

It is evident that every effort continues to be made to expand milling rates to more economic levels as rapidly as possible. With this object in view the building up of ore reserves has continued apace. The important question of milling grades was mentioned several times in Mr. Oppenheimer's statement. While extravagant guesses indulged in by optimists over the past year or so may never be realized, it is becoming increasingly apparent that the Anglo's' O.F.S. mines have generally justified their high capitalizations.

P. Brand's Profits Should Continue to Rise

While it was stated that President Brand's profits and dividends should continue to rise, it was perhaps a little disappointing to hear that a slight fall in grade was likely to take place. Mr. Oppenheimer pointed out that during the past nine months ore initially available for stoping had been of a higher grade than would normally have been the case. With the opening up of stopes in less rich areas, the grade would diminish slightly. As this fall would be more than compensated by increases in tonnage milled and improved efficiency, profits should however, continue to rise. Although it was generally expected that mill throughput would remain relatively static for four or five months 70,000 tons a month should be achieved by the end of the year. Capacity was at present 75,000 tons per month but would be increased to 125,000 tons.

P. Steyn to Continue Excess Development

A notable part of the President Steyn's report concerned the establishment of ore reserves. Excess development work it was stated would be continued until a reserve position in excess of 3,000,000 tons had been built up. Thereafter, development would be conducted on a replacement basis only. A fall in costs would thus be brought about.

Mr. Oppenheimer referred to values obtained during the September quarter of the past year which were lower than those previously disclosed. This had been due to work during the latter part of the year—particularly from No. 2 Shaft—being concentrated on rapid development of levels between the two shafts where values tended towards the lower average disclosed in No. 1 Shaft area. In order to allow this work to go forward at full speed, it had been necessary to restrict development work in the richer area to the south-west of No. 2 Shaft. Development would be resumed in the southern area during 1956 at which time quarterly results should improve. President Steyn would eventually increase its treatment capacity to 125,000 tons per month. A mill throughput of 100,000 tons per month was foreshadowed for the last quarter of 1956.

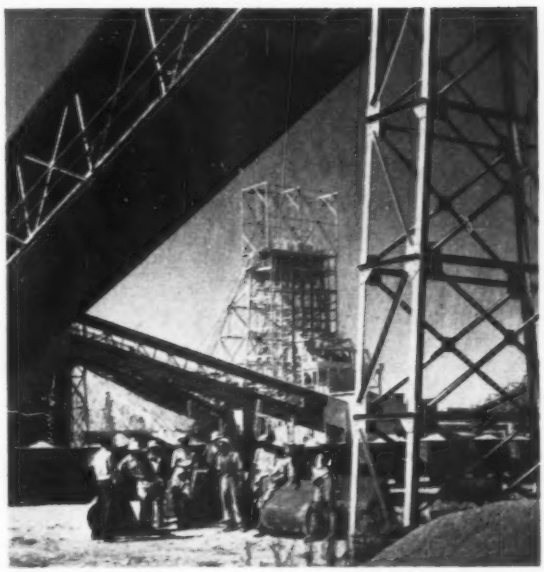
W. Holdings Soon to Mill 100,000 tons p.m.

The general improvement at Western Holdings, particularly in regard to stope faces and the substantial ore reserve now in hand, should ensure that the mine did not suffer the kind of setbacks experienced in previous years. A milling rate approaching 100,000 tons per month should accordingly be achieved by the end of 1956. In addition the grade of ore crushed was likely to be stepped up.

Official Opening of F.S. Geduld

Free State Geduld Mines is being officially opened to-day. At the end of the month, therefore, the property should make its first appearance in the mounting list of Rand and O.F.S. producing mines.

In his statement to shareholders Mr. Oppenheimer slightly lifted the curtain of secrecy which has surrounded work being carried out south of No. 1 shaft. Ore from stopes near the Western Holdings boundary, he said, might be expected to reach the mill towards the end of the current financial year.



Free State Geduld's headgear seen through ore conveyors

Development values so far obtained suggested that this ore would be exceptionally rich.

Meanwhile, when production started, most of the tonnage milled would come from No. 1 Shaft area and should not therefore be expected to be of a high grade. A conservative estimate, based upon information so far disclosed, indicates that initial crushing might yield something in the region of from 7 to 8 dwt. Such a grade would not, of course, be representative of the ultimate level.

Welkom's Grade Likely to Improve

As stoping in any particular area of a mine usually takes place as much as eighteen months to two years after initial development, some time lag was necessarily experienced before sampling results affected milling grade. In the case of Welkom, better values disclosed in recent development were beginning to contribute towards raising the average grade of ore mined. Results should, therefore, show a progressive improvement. During the current year Welkom would be entitled to more native labour. This would enable larger tonnages to be handled.

Loraine: A Marginal Proposition

By increasing throughput and improving efficiencies the monthly loss incurred by Loraine Gold Mines was expected to be gradually reduced. But if the mine was to depend on Basal Reef values and payability at present indicated, it would have to be regarded as a marginal proposition. Yet there were reasonable prospects that development down dip would enable stopes of higher grade to be established. Continued satisfactory development on the "B" Reef would also considerably enhance the mine's long-term prospects.

Rand and O.F.S. Returns for December

Generally speaking returns from Rand and O.F.S. producing gold mines in respect of December showed few outstanding changes from those of the previous month. There were, however, several declines in tonnages which must presumably be attributed to the Christmas holidays. The question has, in fact, often been asked as to why the actual number of working days completed in any particular month should not be published together with the other monthly figures. Such information would considerably aid comparisons from one month to the next and would cause little additional work. December working profits were based on a gold price of 249s. per oz. which was unchanged from that of November.

An increase in profits took place at Welkom to £17,958 from £16,179. As mill throughput declined by 2,000 tons to 81,000 tons the gain must have been entirely due to a better milling grade. This improvement is an encouraging pointer towards the future and accords with the statement by Mr. H. F. Oppen-

heimer, the chairman, that better development values were beginning to contribute towards raising average grade of ore mined. At St. Helena ore crushed declined by 2,000 tons to 98,000 tons but the grade improved sufficiently to maintain profits at virtually the previous month's level. Harmony also milled 3,000 tons less at 71,000 tons and profits fell to £141,041 from £144,207. Blyvoor's return was most disappointing. Mill throughput fell away by 4,000 tons to 95,000 tons while costs advanced sharply to 64s. 10d. from 61s. 8d. Profits dropped to £367,224 from £400,606. Hartebeestfontein provided a departure from the general trend by raising its tonnage by 1,000 tons and earning £131,825 as compared with £120,011.

Rooiberg Arranges Overdraft

In order to meet heavy capital expenditure, principally in connection with power supply and its rough concentrator, The Rooiberg Minerals Development Company has arranged a substantial overdraft with its bankers. As at June 30, 1955, this stood in the company's books at £88,495. This information was given to shareholders by Mr. A. W. Stewart, the chairman, in his statement in respect of the year ended June 30, 1955. The liquidation of the overdraft, he said, together with payments due to the Silicosis Board and the Government would be a drain on cash resources for some considerable time.

Severe Drop in Ashanti's First Quarter Profits

Due to the general strike of African mineworkers on the Gold Coast, the December return from Ashanti Goldfields Corporation showed an estimated loss after depreciation of £68,267 as compared with an estimated profit of £74,242 in respect of November. Estimated profits, subject to taxation, for the first quarter of the company's financial year have fallen to £24,823 as from £210,241 during the corresponding period of the previous financial year.

Although the Gold Coast strike still continues, some encouragement might be drawn from the fact that Ashanti is signing on new recruits daily. This, together with other men returning to work, accounted for the increase of 225 in numbers working since the November report. Milling and treatment of ore available in mill bins, it is stated, commenced on December 29 at the approximate rate of 120 tons daily. Underground production has been rated at approximately 50 tons a day of high grade ore. It is hoped to increase this figure.

Bibiani's Loss

During December the strike of African mine employees at Bibiani (1927) resulted in a loss of £28,035 after depreciation. This compares with a loss of about £11,100 during November. Cumulative figures for the first three months of the company's current financial year ending September 30, 1956, reveal a total loss of £29,492, as against a profit of about £45,200 during the corresponding period of the previous financial year. It has been stated that essential mine services continue to be maintained.

Tinto's Canadian Negotiations

It has been reported that discussions between the Rio Tinto Co. and a Canadian mining group controlled by Mr. Joseph Hirshhorn are taking place regarding the transfer of Canadian mining assets of both groups to a new holding company. No final agreement has yet been reached but it is understood that discussions are proceeding satisfactorily. It is believed that should the deal be concluded control of the new holding company would devolve upon Rio Tinto.

Trepca's Canadian Interest

At the recent meeting of Trepca Mines the chairman, Mr. A. Chester Beatty, gave details of an exploration programme which Selection Trust was conducting in Canada, in which Trepca had a participation. Some interesting projects had been produced during the 1955 field season upon which further work was either in progress or had been planned for next season. One of these was a copper-nickel prospect situated at Lake Renzy some 150 miles north-west of Ottawa. A company called Lake Renzy Mines had been formed in Canada under the technical and administrative management of Selco Exploration Company to conduct an investigation of the project.

At present Trepca Mines had an indirect interest of about 6 per cent in Lake Renzy with the possibility of this being increased to over 9 per cent if all subscription rights were exercised. Mr. Beatty warned shareholders that although the new project was promising, much hard work and a reasonable measure of good fortune would be required in order to make it a prospect of economic value.

Mawchi Soon to Reach Production

At the recent meeting of The Mawchi Mines, Mr. Robert Annan, the chairman, said that it was hoped to start production on a small scale in 1956. It was intended to issue quarterly progress reports in addition to which monthly output figures would also be published.

Ipoh's Lower Output

During the first eight months of its current financial year ending March 31, 1956, Ipoh Tin Dredging produced only 166¼ tons of tin ore as compared with 363¼ tons during the previous corresponding period. This sharp reduction was due to a major breakdown in the dredge last July which put an end to operations until September 15. Besides this misfortune, a slightly lower grade of ground was treated. In his recent statement to shareholders, Mr. R. E. Binns, the chairman, said that in the near future the dredge would be forced to traverse tailings for a period of two months or more before moving to fresh payable ground. Poorer results and more or less substantially curtailed profits should, he said, therefore be expected for the current year.

Reflecting the somewhat doubtful future outlook Ipoh 16s. shares stand at about 22s. to yield over 26 per cent.

Temoh Produces More

At the recent meeting of Temoh Tin Dredging, the chairman, Mr. R. E. Binns stated that during the current year both sections of the property were in full production and outputs had been satisfactory. That this has indeed been the case is apparent from the company's quarterly production returns which showed that during the first quarter of the current financial year ending June 30, 1956, 74½ tons of tin ore had been produced as compared with only 43½ tons during the previous corresponding period. Better security conditions, a higher average price for tin, and expectation of improved operating conditions suggested, said Mr. Binns, that the current year's results would be no less favourable than those of the previous year. Temoh 5s. shares at present stand at about 8s. at which price they yield nearly 15 per cent.

R.S.T. Group Informal Meeting

A circular to shareholders of Rhodesian Selection Trust and Roan Antelope Copper Mines from Mr. R. L. Prain, their chairman, has invited shareholders to attend an informal meeting of the company to be held at 11.30 on Thursday, January 12, at the Chartered Insurance Institute, London. A similar meeting will be held in New York on February 2, to which members living in America will be invited. As on previous occasions Mr. Prain stressed that the meetings would in no sense be formal general meetings of the company. No resolutions would, therefore, be submitted nor would members be able to exercise voting rights.

Mr. A. Crompton, M.I.M.E., has been appointed to the board of Robey and Co. Ltd. Mr. Crompton is manager and chief engineer of the company's mining department.

MINING ENGINEERS required by Tin Mining Group of Companies in Malaya. Written applications, giving full details of experience, technical qualifications, age, and copies of references should be sent to Box 348, Walter Skinner Ltd., 20 Copthall Avenue, London, E.C.2.

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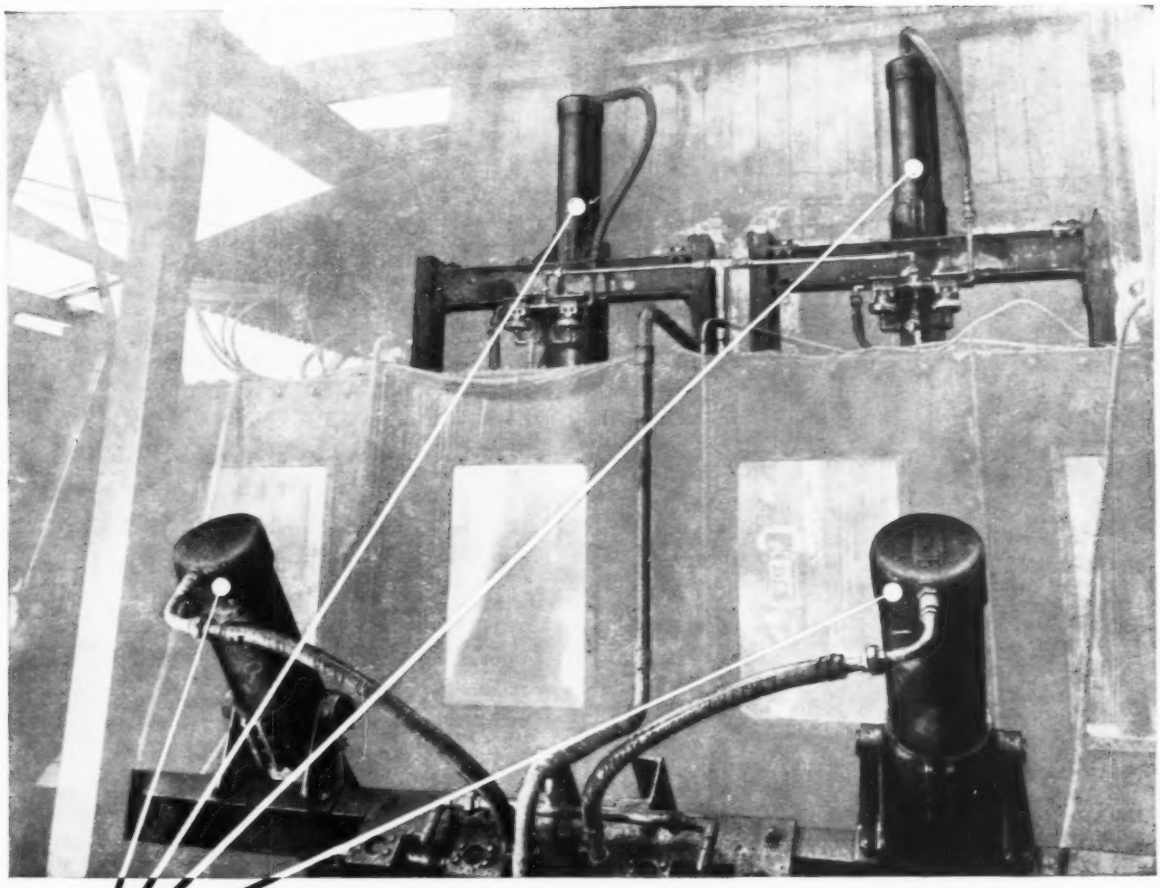

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CP42

THE CENTRAL MINING—RAND MINES GROUP

DIVIDENDS—DECEMBER, 1955

The following dividends payable to shareholders registered in the books of the Companies at the close of business on 31st December, 1955, will be paid on or after 8th February, 1956. The dividends on shares to bearer will be paid after surrender of the appropriate coupons at the Office of the London Secretaries of the Companies, 4, London Wall Buildings, E.C.2, or, with the exception of the Company marked with an asterisk, at the Crédit Lyonnais, 19, Boulevard des Italiens, Paris.

The dividends will be payable in British currency, at par, at the rates declared in South African currency (Column No. 4), less South African non-resident shareholders' tax (Column No. 5).

NAME OF COMPANY (Each incorporated in the Union of South Africa).	Dividend No.	Coupon No.	Amount of dividend declared per share	Deduction in respect of South African non-resident shareholders' tax, per share	Amount of dividend after such deduction, per share	Provisional allowance of credit authorized in the £	Gross amount of dividend, per share	Rate of South African taxation applicable in the £	Rate of deduction of United Kingdom income tax in the £	Amount of United Kingdom income tax deducted, per share	Net amount of dividend per share
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			s. d.	d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Blyvooruitzicht G.M. Co., Ltd.	20	—	1 0	0.90	11.10	4 3	1 2.10	9 5	4 3	3.00	8.10
Consolidated M. Reef M. & E., Ltd.	92	89	2 6	2.25	2 3.75	4 3	2 11.24	5 2	4 3	7.49	1 8.26
Crown Mines, Limited	109	109	3 6	3.15	3 2.85	3 2	3 10.16	—	5 4	1 0.31	2 2.54
Durban Roodepoort Deep, Limited	70	70	1 3	1.125	1 1.875	3 3	1 4.567	—	5 3	4.349	9.526
East Rand Prop. Mines, Limited	72	73	2 0	1.80	1 10.20	4 3	2 4.19	—	4 3	5.99	1 4.21
Modderfontein East, Ltd.	57	38	1 3	1.125	1 1.875	3 0	1 4.324	3 0	5 6	4.489	9.386
‡Pretoria Portland Cement Co. Ltd.	96	—	2 3 Bonus 9	2.484	2 9.516	4 3	3 6.56	6 11†	4 3	9.044	2 0.472
Rand Mines, Limited	105	105	3 0	2.673	2 9.327	4 3	3 6.320	—	4 3	8.993	2 0.334
Transvaal Con. Land and Ex. Co. Ltd.	33	33	2 6	2.25	2 3.75	4 3	2 11.24	—	4 3	7.49	1 8.26
*Transvaal Gold M. Ests., Ltd.	90	90	3	0.225	2.775	3 2	3.297	—	5 4	.879	1.896

†This rate also applies to the previous dividend paid on 5th August, 1955.
‡The figures shown in Columns 5-12 are applicable to the total payment of 3/- per share.

Where no figures are shown in Column No. 9, the rates of South African taxation applicable in the £ cannot yet be ascertained, as they are dependent on the final particulars of the South African taxation of the companies concerned which are not yet available.

PAYMENT OF COUPONS

COUPONS presented for payment at the Office of the London Secretaries will, unless accompanied by Inland Revenue declarations, be paid at the rates shown in Column No. 12, which are arrived at after deduction of United Kingdom income tax (Column No. 11), at rates reduced to allow of relief in respect of Dominion taxes (Column No. 10). If accompanied by Inland Revenue declarations, they will be paid at the rates shown in Column No. 6. They must be left at least four clear days for examination and may be presented any day (Saturdays excepted) between the hours of 11 and 2. Depositors will be notified at the time of deposit when the cheques will be ready. LISTING FORMS may be had on application.

COUPONS presented at the Crédit Lyonnais, Paris, will be subject to the deduction by them of French income tax from the amounts of the dividends shown in Column No. 6.

Note : The Companies have been asked by the Commissioners of Inland Revenue to state :—

Under the provisions of Section 348 and the 17th Schedule of the Income Tax Act, 1952, as amended by Section 26 of the Finance Act, 1953, relating to "unilateral relief" from double taxation, South African tax applicable to the dividends is allowable as a credit against the United Kingdom tax payable in respect of the dividends. The deduction of tax at the reduced rates in the £ (Column No. 10) instead of at the standard rate of 8s. 6d. in the £ represents a *provisional* allowance of credit at the rates shown in Column No. 7. The final rate of credit allowable to a particular shareholder depends on his personal rate of tax and may be more or less than the rates shown in Column No. 7. Revision of the credit involves corresponding adjustments of the gross amounts of the dividends for United Kingdom tax purposes (Column No. 8).

THE GROSS AMOUNT OF THE DIVIDEND, PER SHARE, TO BE INCLUDED IN ANY STATEMENT OF TOTAL INCOME FOR UNITED KINGDOM INCOME TAX AND SURTAX PURPOSES IS SHOWN IN COLUMN No. 8.

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Gold Mine Returns

AUSTRALIAN GOLD

Company	4 weeks to Nov. 29 1955		4 weekly period since year-end	Current Financial Year Total to date		Last Financial Year Total to date	
	Tons (000)	Yield (oz.)		Tons (000)	Yield (oz.)	Tons (000)	Yield (oz.)
Central Norseman	12·6	9,453	9	121·2	68,800	109·2	56,915
Central Victoria	73·2	273	9	765·3	3,001	1374·2	3,939
G.M.'s of Kalgoorlie	40·2	10,253*a*	9	337·5	84,633	137·1	38,361
Gt. Western Cons.	36·2	5,113	9	302·5	41,697	297·4	37,377
Morning Star	0·9	358	9	12·2	3,702	12·2	8,384
North Kalgurli	27·9	6,412	12	320·9	69,967	222·5	51,285
Sons of Gwalia	10·5	2,300	12	110·9	22,682	105·0	24,059

* Quarterly.
a In addition produced 839 oz. in concentrates. Treatment of G.M. of Kalgoorlies' mill of ore from New Coolgardie commenced.

SOUTHERN RHODESIAN GOLD

Company	November, 1955			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Arcturus	3·1	1,067	5·2	5	15·4	3,420	23·7	15·0	4,624	15·9
Cam & Motor	24·0	7,996	41·3	5	120·0	38,592	205·0	120·5	37,762	207·9
Falcon Mines	18·1	3,304	*a*9·8	2	36·2	6,549	18·9	34·9	6,396	21·6
Globe & Phoenix	6·0	3,717	24·1	11	66·6	39,608	255·6	66·8	39,428	256·3
Motapa Gold*	18·0	2,473	2·6*c*	11	182·3	25,408	15·9	200·5	27,528	36·0
Muriel Mine	3·4	862	10·2	5	16·6	5,173	50·5	15·8	4,757	50·4
Tebekwe	3·9	1,213	7·2	5	32·9	4,877	15·0	41·0	*b*—	13·2

* Excluding premium gold sales.
a This figure includes additional profit from accumulated concentrates retreated from all three mines.
b not available.
c In addition £505 received being adjustments on output for August.

WEST AFRICAN GOLD

Company	November, 1955			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Amal. Banket	61·4	10,638	*a*38·2	2	144·5	22,711	67·0	167·1	26,639	64·4
Ariston	30·6	8,920	39·4	2	70·3	19,665	81·3	71·9	21,604	102·7
Ashanti	24·0	18,247	*b*74·2	2	35·5	29,058	93·0	53·0	32,759	139·4
Bibiani (1927)	19·0	3,050	L11·1	2	49·0	10,225	20·8	60·0	13,100	31·0
Bremang*	550·3	2,574	*b*—	11	8005·6	37,473	*b*—	5712·9	26,417	34·7
G.C.M. Reef	7·7	2,828	*b*10·0	5	43·0	15,390	36·1	49·3	20,312	75·0
Konongo	2·2	1,843	1·9	2	5·4	4,939	16·8	6·7	6,377	31·3
Lyndhurst Deep	1·0	909	3·6	2	2·0	2,015	8·6	1·8	2,303	13·1
Taquah & Abos.	19·7	4,597	2·0	8	220·7	46,311	24·4	223·9	47,364	28·8

Note : General strike of African workers started Nov. 20.
L indicates a loss.
* Cu. yd. dredged. Profit figures include premium revenue.
a Excluding post-strike expenditure from Nov. 20 to end month totalling £8,913.
b Mines unable to publish authoritative figures owing to strike.

INDIAN GOLD

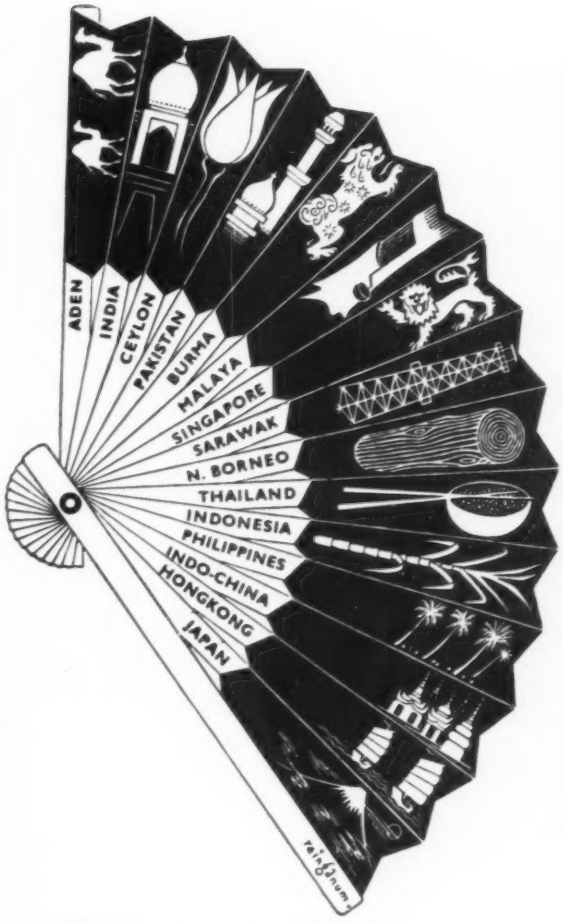
Company	November 1955		Months since year-end	Current Financial Year Total to date		Last Financial Year Total to date	
	Tons (000)	Yield (oz.)		Tons (000)	Yield (oz.)	Tons (000)	Yield (oz.)
Champion Reef	14·7	5,401	11	157·9	56,063	164·4	64,514
Mysore	19·7	5,528	11	180·7	56,344	200·1	72,784
Nundydroog*	18·6	6,192	11	209·1	70,683	232·0	66,276

* Includes tailings.

MISCELLANEOUS GOLD

Company	November 1955		Months since year-end	Current Financial Year Total to date		Last Financial Year Total to date	
	Tons (000)	Yield (oz.)		Tons (000)	Yield (oz.)	Tons (000)	Yield (oz.)
Br. Gv. Consol.*	229·5	2,126	11	1732·2	16,640	2191·3	19,743
Clutha River*	275	428	9	2,207	4,092	1,947	3,685
Frontino	11·2	6,161	11	128·4	69,747	115·2	63,100
Kentan (Geita)	23·0	3,380	5	114·4	17,047	111·1	17,076
New Gu. G'fields	3·5*a*	1,193	2	6·9	3,744	7·0	2,729
St. John d'El Rey†	26·8	99·6	11	279·2	1,197·3	289·5	1,334·3

a Including 383 from tributors and Koranga alluvials.
* Cu. yds. dredged.
† Yield in £(000).



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Mining Men and Matters

New Year's Honours.—Sir Frederick Godber, chairman of Shell Petroleum and Shell Transport and Trading Company became a Baron in the Queen's New Year Honours List published this week. Sir Hubert Stanley Holsworth, chairman, National Coal Board, was created a Baronet. A Knighthood was conferred on Major A. H. Bibby, chairman, Martins Bank. Other awards of interest to readers of *The Mining Journal* include the award of the G.B.E. to Sir John Morison, chairman of Iron and Steel Holding and Realisation Agency; the K.B.E. to Sir Claude Dixon Gibb, chairman and managing director, C. A. Parsons and Co.; the C.B.E. to Mr. A. G. Glenister, chairman, Malayan Chamber of Mines and chairman or director of numerous tin mining companies; Mr. R. J. Moffat, director general of marketing, National Coal Board; and to Mr. Gerald Steel, general managing director of United Steel Companies.

Christmastime : Once again *The Mining Journal* received at Christmastime a delightful variety of calendars, Christmas cards and diaries from friends and well-wishers. In particular, we would like to acknowledge the good wishes for the New Year received from the following: Anderson, Boyes and Co., Ltd.; British Insulated Callender's Cables Ltd.; Consolidated Zinc Corporation Ltd.; Craelius Co. Ltd.; Cyprus Government Office; Davison and Co. (Hexham) Ltd.; Denver Equipment Ltd.; Philip Henderson and Co.; Holman Brothers Ltd.; Hunting Aerosurveys Ltd.; Mavor and Coulson Ltd.; Mond Nickel Co. Ltd.; Rip Bits Ltd.; Ruston-Bucyrus Ltd.; Stewart and Lloyds Ltd.; Richard Sutcliffe Ltd.; Westfalia Lünen; and Hugh Wood and Co. Ltd. We would like to take this opportunity of again wishing all our friends at home and abroad a Happy and Prosperous New Year.

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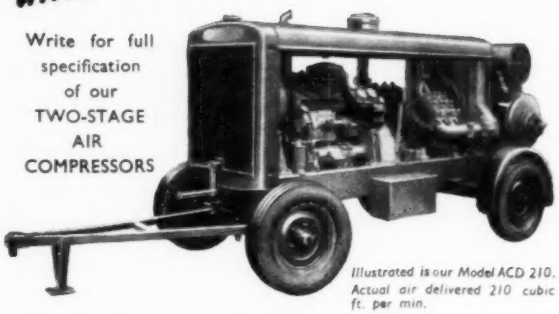

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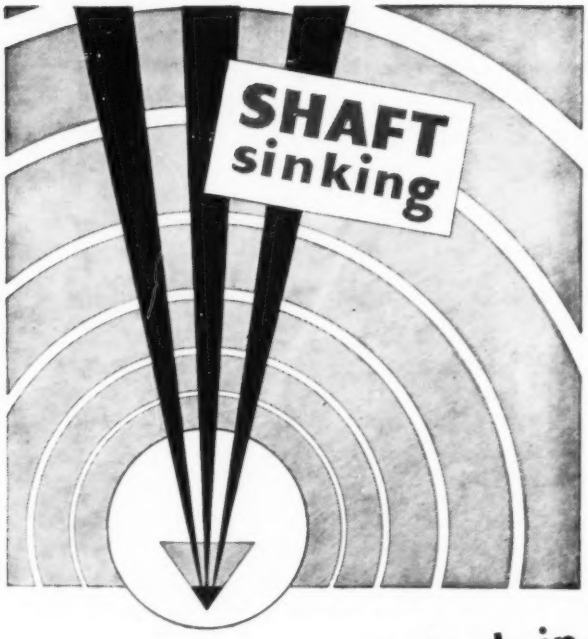

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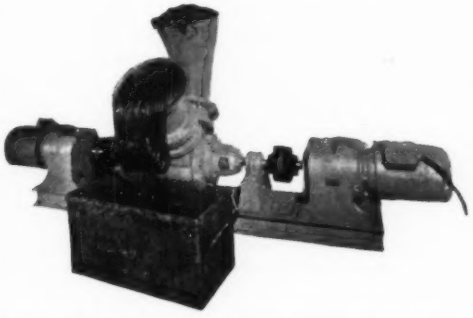

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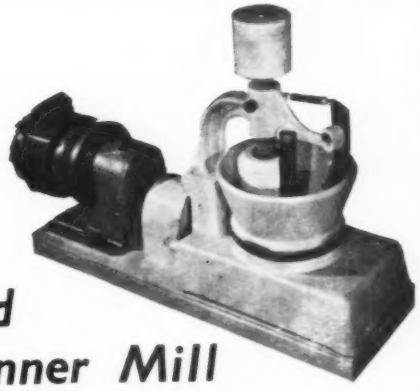

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This book tips no shares, nor does it set out to evaluate the prospects for any particular mine. Its sole purpose is to present the essential background knowledge without which a considered view of this or that South African gold mining share is not possible. It does so in terms which the lay investor can understand, yet in sufficient detail to enable him to put the principles involved to practical use.

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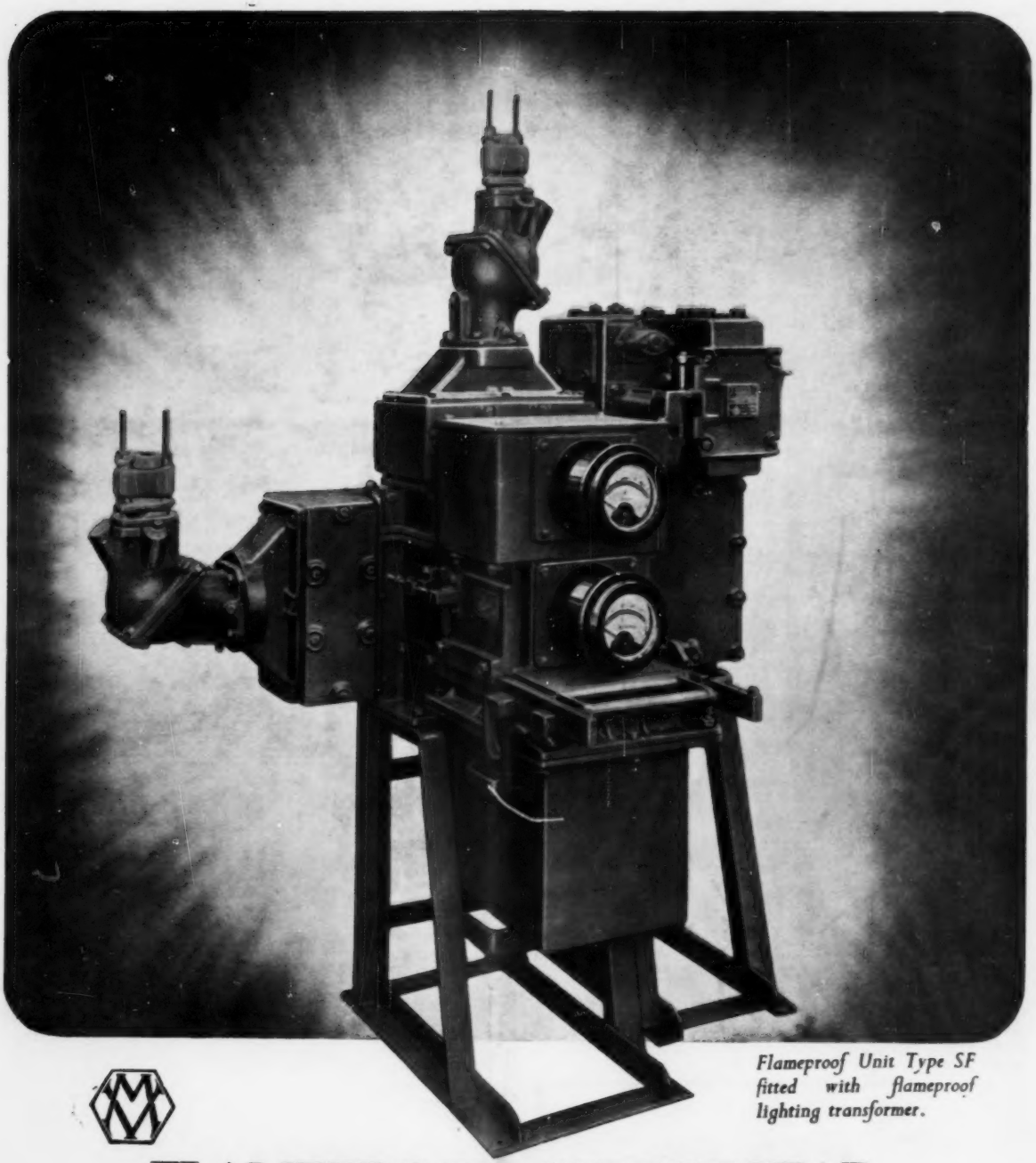

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